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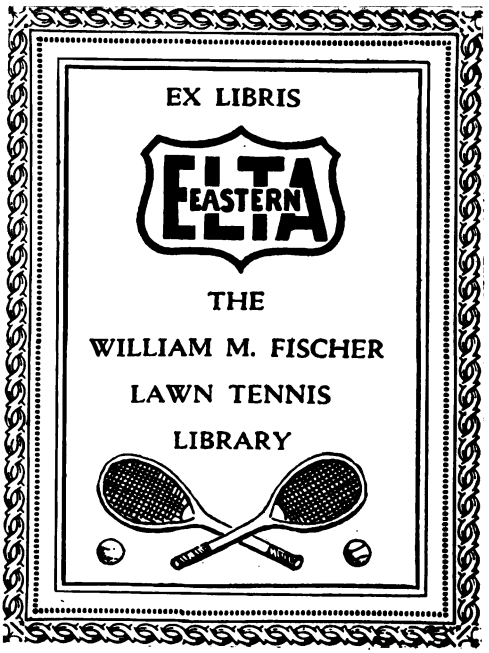

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The end of a long drive in golf

(See page 13)

THE WOMAN'S BOOK OF SPORTS

A PRACTICAL GUIDE
TO PHYSICAL DEVELOPMENT
AND OUTDOOR RECREATION

BY

J. PARMLY PARET

ILLUSTRATED FROM PHOTOGRAPHS TAKEN BY THE AUTHOR

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1901

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THE WOMAN'S BOOK OF SPORTS

INTRODUCTION

THE American young woman of the twentieth century counts outdoor sports as much among her accomplishments as she does French or higher mathematics. Her brother has built up his constitution by the athletic training he underwent at college, and she has no wish to suffer by physical comparison. Nearly every woman's college has recognized the tendency of the times by adding a course in physical development to its curriculum, the director of which holds an established position as important as that of the professor of astronomy—and (speaking strictly in confidence now) far more useful.

Nor does the love for outdoor sports cease when the college days are over, for young women of our leisure classes find the best method of recreation in golf, tennis, bicycling,

and the water sports. As a relaxation after the round of heated ballrooms and the nervous rush and hurry of the social season—as a sort of antidote for excessive gaiety—no change can offer more relief than healthy exercise in the open air.

For brain-workers, too, those who live under a mental strain of any kind, nothing can be more beneficial. "All work and no play make Jack a dull boy," and Jill suffers just as much from the same monotony. It needs only a little time each day in the open air, with enough exertion to make one breathe deeply, to compensate for many hours of brain-work, for fresh air lends new vigor to the mind and increases its capacity for mental effort.

There are few good books of instruction in sports for women, and the need of them is urgent. Men have their literature galore on the subject, but sports among American women are so new that their devotees have been chiefly confined to books written for their brothers, or to learning their games direct from paid instructors. Now, women's faults are not always

men's faults, and one need only read the books written for men to appreciate the necessity for just such a volume as this.

It has been the aim of the author to make the instruction in this book as simple, as direct, as elementary as possible, for its lessons are intended for the beginner in sports. The more advanced students of any game must go to the professionals or expert amateur coaches to improve their skill. While it is the practical rather than the theoretical that has been aimed at, it has seemed to the writer above all important to explain the reason for everything asked. If we know why we should do anything, it seems very much easier to do it.

The relative value of precept and example has been dwelt upon in many proverbs, and one wise old ancient declared truly that "men trust rather to their eyes than to their ears." One might describe a dozen times the correct position for any stroke and produce less effect on a beginner's mind than the demonstration of a single example that the eye can grasp. For this reason, an effort has been made here to

illustrate all of the cardinal points dwelt upon by reproducing photographs of women taken while actually doing the thing described. With the help of these illustrations the text should be doubly instructive.

While women seldom if ever take part in baseball, football, or athletic games, or in yachting or rowing races, they are often among the most enthusiastic spectators at such sports, even if they are sometimes lost in baffling technicalities. For those who would know why the man they are watching kicks the ball, or runs the bases, or sets a spinnaker, or does any one of the countless other things that happen during the contest, a brief explanation of the inward workings of men's sports is added. A half-hour's reading of this chapter may save the humiliation of technical ignorance.

Should this book be the means of adding, though ever so slightly, to the ever-increasing interest in outdoor sports among women, the author will feel that he has been fully repaid for his labor.

J. P. P.

NEW YORK, *April, 1901.*

I

A RUDIMENTARY LESSON IN GOLF

EVEN in these advanced days of many professionals, a large proportion of those who learn to play golf do not have the advantage of expert coaching; and particularly among women who pick up the game themselves there is a woful lack of the ingredients of good form which are so essential to any degree of skill.

Hosts of women who want to learn the game do not have access to the services of a professional or expert amateur coach, while many others who might, do not take advantage of such coaching for one reason or another—economy, modesty, or indifference. Be the cause what it may, the result is that we see far too many women on the links who have all the natural requirements for playing the game,

yet who wield their clubs so awkwardly that it does not require a second glance to show any initiated observer the reason for their shortcomings.

As with most other games, in golf everything depends upon beginning in the right path. It is too late for a beginner to wait until she has learned to hit the ball truly before she learns the first principles of good form, for then she will have acquired the bad style that is so difficult to shake off, and which stands forever in the way of progress at the game. Just as surely as an ounce of prevention is better than a pound of cure, a little advice at the beginning will save many weary hours of correction after the bad habits have been allowed to grow.

In no other sport is good form in the stroke so imperative, and perhaps in no other is it more often neglected. A few words, then, from one who has had to learn the game himself, and who has also taught women the first rudiments of good form enough to appreciate their chief shortcomings, may prove the ounce

Addressing a golf ball before the drive

of prevention. If they are followed closely, they may save the weary hours of correction later on.

First, as to the selection of clubs, let me say that aside from the question of good heads and good shafts (for both of which a beginner must depend on expert inspection) the most important consideration is that of length, and this depends entirely upon the height and the length of the arms of the prospective player. A club that is too long or too short often has much to do with a beginner's poor strokes, and too much care can not be given to the selection of those with shafts of proper length.

The position for all strokes with the wooden clubs should be erect, with one leg straight under the body, heel to the ground and toe pointed slightly in, and the shoulders bent a little forward from the hips. The level of the grip should be slightly below the hips and not more than four inches from the body.

In selecting a driver or a brassey, then, place the head of the club so that it naturally rests flat on the ground, then step back, and,

taking the proper position for the stroke, see that the middle of the grip—not its shortest end, nor the extreme end of the shaft—reaches to the position in which your hands should be in making a drive or a brassey stroke.

For the cleek, mid-iron, and lofter the shafts should be only an inch or two shorter, but the niblick and approaching mashie should be still shorter in the shaft, for in using them the body is bent over more, the grip is shorter, and the swing less. The putter should be the shortest of all the clubs, for in using it properly the player bends down well over the ball.

The best time to practise in quiet and without the "gallery," which is usually so disconcerting to a beginner, is in the morning of some week-day when there are few other players at the links. If a professional's services are to be had, he will give all the instruction that is necessary, but if the novice intends to learn the game alone, it is well to begin by hiring a caddie and practise first at driving from the tee. A half-dozen balls can be driven

out one after another, and the caddie told to bring them all in again after the last has been played.

A rubber tee is often useful for a beginner, as it always holds the ball at the same height from the ground, but when she becomes more skilful she will probably discard it for the same reason that she first used it, for then she will not always want the ball teed the same, the height depending on the natural slope of the ground before her and the hazards to be avoided.

The freedom of the wrists is very important in all golf strokes, and that "waggle" which many good golfers go through before each stroke is not all done for effect; it has a distinct use in limbering up the wrists. Upon their freedom depends much of the snap of a stroke, and consequently the distance the ball will travel. Constant swinging of a golf-club, a cane, or even a broom-handle, when not at the links, will do much to limber up the wrists. The hands should be placed close together and held still in front of the hips, the

stick being swung from side to side by the motion of the wrists, not the arms.

I have found that the fault with most poor strokes made by women lies in their improper position, or "stance," as it is technically called. They always insist on standing too far ahead of the ball and too far away from it, the result being that they bend forward to hit the ball and strike it on top. To find the proper distance, the club should first be laid with its head resting naturally on the ground behind the ball—flatly, not with only its toe or its heel touching—and then the player should take her position so that the hands grasp the middle of the grip with the elbows close in to the sides, the body bent slightly forward from the hips, and the hands four inches in front of the body, just as in testing the length of a new club.

To stand ahead of the ball or too close to it, in most cases, makes you top it, and a common fault with women players is their tendency to top all their drives, and make the ball roll or bound along the ground instead of ris-

The full swing for driver or brassey

ing in the air. If they stand far back of the ball, they fear to pull it around off the course, but the fault lies in their not turning the grip of the club in the hands until its head gives the direction truly.

The ball should never be hit as the club is descending, but after the head has fully reached the bottom of its swing, or just as it begins to rise again; the "stance" must be far enough behind the ball to insure this.

The left foot should be slightly farther away from the line of direction than the right. When this position is taken, the club should be grounded again back of the ball, and if the direction toward which its face points shows that the ball would take the wrong course, the shaft should be turned in the hands until the head points in the right direction. Then tighten the grip so that the club can not turn in the grasp when it is being swung, and after addressing the ball once or twice, with possibly a preliminary "waggle" or two to loosen the wrists, make the drive. I should advise beginners, however, not to let the habit of pre-

liminary motions grow on them, for they very often serve to throw off the stroke.

The back-swing should begin with the forearms, then, gradually turning the body as the club is drawn back, the upper arms and shoulders should come into play, and finally the wrists, until the upper part of the body is turned away at right angles to the ball and the club has been carried back far behind the head—if possible behind the left shoulder. At the end of a full back-swing the club points almost exactly in the direction the ball is to go.

But in making this swing two things should be borne in mind: first, that the player's head should never be moved from its first position with the eyes fixed on the ball; and, second, that the swing should be slow, steady, and in a true circle. To stiffen the wrists, and so cut off the swing when the club is only over the right shoulder, means to lose much of the power and freedom in the stroke, and consequently to sacrifice both accuracy and distance.

When the club reaches the end of its back-

swing it should not hesitate or stop there, for this also serves to throw off the stroke. It should start downward at once on the forward swing, with an even motion that should be quickly accelerated with the forearms, then the shoulders, gradually turning the body back to face the ball again, and finally, just before the club reaches its mark, the quick bending of the wrists that gives the snap to the drive.

Nor should the stroke be cut off at once, after driving the ball, by checking the club too suddenly. The driver should be allowed to follow through as evenly as possible—that is, the body should continue the turn on around, as the ball is hit, until it faces nearly in the direction the ball is going, though without lifting the feet. The club should follow the ball until it reaches the full length of the extended arms, when the forearms bend and draw it gradually back of the left shoulder, and the wrists finally stop its swing by bringing it up behind the right shoulder with a short turn like the moulinet of a swordsman.

After the ball has been hit, the head of the

club should travel in the same direction as long as possible before the finish of the swing is allowed to divert its forward motion. This insures the accuracy of direction and adds to the speed and distance of the ball.

Naturally, a golf-club swings on a pivot formed by the hands and wrists. If this pivot is stationary, the club's head will describe a perfect circle in the swing, but in a true drive the pivot moves forward as the club is passing the lowest point of its circle, which is thus elongated at the bottom. In this way the club travels straight ahead for a short distance just before and just after hitting the ball, and the wrists or pivot follow through in the swing parallel with the ground before they begin to bring the club upward over the shoulder.

To increase the natural reach of the arms as well as to add the player's weight to the power of the stroke, the body should also follow through, the weight being shifted at the bottom of the swing from the right foot to the left. The longer the club's head follows the direction of the ball the more certain will be

The weak finish of a beginner's drive

(Note the stiff position, the unturned shoulders, and the club stopped over the left shoulder)

the direction of the drive, the less the danger of slicing or pulling, and the greater the length. This method of following through with both the body and club is used on all full strokes when distance is needed, and is one of the cardinal principles of good form in golf.

Another vital point, that applies to all other strokes as well as to driving and to brassey play, is to keep the eyes fixed on the ball until *after* it has left the ground—not until just before it is hit, or as it is leaving the turf, but until it is well away from the club. A good way to insure this is invariably to watch if the club cuts the turf or hits the ball clean, before looking up to see the success of the stroke. Watching the ball in the air can not alter its direction or improve its length, while looking away, even a small fraction of a second before the stroke is completed, ruins many otherwise good strokes.

A well-known professional golfer has suggested that many people top the ball because they look at the top of the ball while address-

ing and striking it, and he believes that it is much wiser to look at the back of the ball where it is to be hit, or at the ground just behind ball. This latter suggestion seems especially good for brassey strokes, or when a lofter or mashie is used to get over some hazard, for then the bottom of the club is expected to cut slightly into the turf in order to get well under the ball.

In many ways the same instructions that apply to driving and brassey play are also useful for most other strokes. Once having got away a clean drive, the ball will probably lie on the fair green. Let us then consider the second stroke when no hazard threatens.

If the ground is level in front and the putting-green within reach of an iron (about one hundred yards for a woman), a cleek or mid-iron is the proper club to use, and if the full length of the stroke is required, the same position and the same swing that were used for the drive are necessary, the same follow through and the same close watching of the ball until after it has left the club.

If the ground slopes away rapidly before you, the "stance" should be slightly farther forward so that the ball will not be raised so much, and if the course rises gradually in front, one should stand a little farther back and get the club well under the ball to raise it over the higher ground.

In each case—in fact, in every case—the grip should be adjusted in addressing the ball so that the angle of impact is in line with the direction you want the ball to follow. The swing, too, should always be parallel with this line; the slightest divergence to the left or right tends to pull or slice the ball off the proper course.

Now, once within approaching distance, the stroke varies greatly, for then it all depends on the lie of the ball, the distance to the hole, and the character of the ground near the green. Let us presume level ground with a wide flat green to approach from a distance of fifty yards. If the ground is true before you and there is no hazard near the green, it is generally safe to risk running up the ball—

a play which is made with a half-arm swing from the cleek or mid-iron, the ball bounding along until it stops on the green, if the aim and force are accurate.

Should a bunker or other obstruction intervene, however, or the ground be uneven and not likely to let the ball roll true, or if there should be any kind of a hazard beyond the hole that would punish an overapproach, it is wiser to pitch the ball on the green. For this stroke, which is played with a mashie or a lofter, one should stand well behind the ball, with the left foot a trifle farther back from the line of direction, and striking well under it, even at the risk of taking up some of the turf with the ball, make it jump well up into the air and fall so straight as to stop rolling almost at once.

This method of pitching on the green is more difficult to learn, but much more accurate and scientific when it has been mastered. Many expert players use it entirely, even when the ground is perfectly level before them. They learn to chop the ball so sharply that it

Putting on the green

gets a little back twist, which makes it drop dead where it falls on the green, and some of the best players approach a hole by this play with marvelous accuracy.

Once on the green, the putter, of course, is the only club to be used, but there is less chance to show a beginner how to putt than to make any other stroke in golf. If she has played croquet it will come natural to her. Putting is simply a question of rolling the ball into the hole, just like hitting a stake in croquet; although a new element appears in golf, for distance as well as accuracy must be considered. If the ball misses the hole and rolls on some distance, it will perhaps be no nearer than before, and the stroke will have been wasted. The ball should be hit only hard enough to go a few inches beyond the hole—as little as possible—if it fails to go in, and thus give a sure chance to putt it down with the next stroke.

A putter is always much shorter than any of the other clubs, and it is necessary to bend well over in using it. The left foot should be

back of the right as in other strokes, but a player should never stand around facing the hole and push the ball straight in front of her from between her feet, as some women play croquet. A favorite position among expert players is to bend the right knee slightly and let the back of the right hand or forearm rest against it for support and accuracy.

But it is really the hazards on the course that offer the widest range of play in golf, and were it not for them the strokes would offer too little variety for enjoyment. Let us suppose that the drive or one of the strokes through the fair green has landed your ball in a bunker—just a plain, ordinary, grass-covered bunker, with the usual ditch on the near side of it. Here the club may not be grounded, and the ball must be played from exactly where it lies.

If it is so close to the sharp face of the obstruction that the chances of lofting it over from the ditch are not very good, it is wiser to turn around and play it back on the course. Ten yards more or less on the next

stroke will not materially affect your chances for the hole, and it is better to lose these few yards and then get in a full stroke, if the hole is still some distance away, than to try to jump just over the hazard on the first stroke, for you may fail, and the ball roll back into trouble again. In such cases a mashie or a niblick is the best club, but a lofter must generally be used if you try to lift the ball over the bunker.

When your ball comes to rest well back of a bunker or other obstruction in the course, either after playing out from the hazard or at the end of the previous stroke, a lofter is almost always the best club. Standing well behind the ball and striking well under it, give the full swing for distance and carry well over the hazard. To be cautious and jump just over the dangerous spot often lands the ball in the ditch again, to the intense discomfiture of the player, for the penalties of such misplays are costly.

Should the ground be rising back of the hazard, or the lie be a hanging one—that is,

with more than the usual portion of the near side of the ball exposed to get the club under—it is often safe to use a mid-iron or even a cleek to carry the hazard and so get more distance.

A sand bunker or trap bunker, which is generally put in the path of a rolling drive that might otherwise get as much distance as a flying ball, is perhaps the most treacherous of all hazards to get out of. Here, everything depends on the lie.

If the ball stands up so that it can be well hit, a lofter or mashie will generally lift it out of difficulty, but one should never strike too close or try to gain much distance; it is wiser to scoop up a whole handful of sand and the ball with it, if it progresses only a few yards out of trouble, than to try to hit it too full and perhaps get still deeper into the "slough of despond." Loose sand stops a ball quickly, and it must always be lifted well away from either sand or mud to get free.

If the ball rests in a deep depression, a niblick generally has to be called into service, but if it stands upon a little hillock of sand like a

Lofting out of a bad hazard

natural tee, it can often be hit with a full iron stroke as if out on the fair green.

The use of the brassey is generally the last thing a woman learns in golf. She has a tee for driving, and the iron clubs cut well under the ball, but until she becomes expert in her play, she generally tops the ball badly with a brassey, and it simply bounds along a few yards, possibly rolling into the nearest trap bunker yawning open for poor strokes.

Most beginners, however, men as well as women, very much overdo the use of the brassey. It should never be brought into play unless the hole is beyond the reach of an iron club, and not always then. If properly handled, an iron should advance the ball at least one hundred yards for a woman and half as much again for a man. Beginners, who have not yet learned to get the full length from their irons, often make the serious mistake of resorting to a brassey instead of keeping to the proper club and learning to get the necessary length with that.

Golfers who are over-anxious to make phe-

nomenal distances with their strokes generally make haste slowly, for it is much more profitable to keep the ball on the course and well out of the hazards, with only fair length, than to be getting constantly into trouble of one sort or another in the effort to make very long strokes.

In the case of bunkers, as in other things with the beginner, once more an ounce of prevention is better than a pound of cure. A rather Irish Scotchman once remarked, with much truth, "If you keep out of the hazards, you won't have to get out of them." This is an excellent maxim and well worth keeping in mind always on the links.

II

LAWN-TENNIS FOR BEGINNERS

Of all the amateur sports and pastimes in which the modern young woman indulges, no other requires so much physical exertion as lawn-tennis, and yet in moderation it is one of the very best forms of physical exercise. The fact that it is played almost exclusively outdoors and under the most healthful conditions tells heavily in its favor, for with the fresh air, bright sunlight, and green surroundings that are almost invariably found near tennis-courts, good health is sure to follow enjoyment.

As in all other vigorous sports, the one watchword for success is moderation, and no woman ought to play tennis much until she is thoroughly satisfied that her heart is in no way affected. It requires a strong heart and

considerable physical endurance to play habitually; but once a woman is assured of robust health, nothing can be better than hard tennis play, for the healthy perspiration carries off the impurities of the skin and flesh, while the exciting exercise makes the breath come fast, the heart beat quicker, and the rich red blood leap through the veins with a glow of health that brings the rosy color to the cheeks. The exercise is evenly distributed, too, bringing into play all the muscles of the body as well as the mind.

Tournament play can not always be recommended for women. In the hot summer weather a long match is often a severe strain, which is materially increased by the fact that most final matches are the best-three-in-five sets instead of the best-two-in-three, as in England. One can not tell when a match may result in a long, tiresome struggle that will prove a physical drain, and it seems very unsportsmanlike to stop play because of exhaustion, and give the victory to one's opponent in the middle of the game. If a woman has

plenty of strength and endurance, however, tournament play will not only not harm her, but in most cases should prove distinctly beneficial.

Even though matches are not anticipated, every one who enjoys lawn-tennis as a pastime wants to play well, and yet few women do so. This backwardness on the part of the feminine devotees of the sport is due chiefly to a lack of thoroughness in mastering the first principles of the game. Too often they pick it up carelessly, and never take the trouble to learn to play well, as do most English women. More than in any other sport, it is necessary for a woman to play against a man, and one who knows how to play much better, to really learn the game as men play it. All of the most skilful women players have gained their ability by constant practise against men.

First and most important of all, the racket should be firmly gripped in making all of the strokes. A loose grasp ruins otherwise good play, and no habit will interfere with progress more than that of holding the handle loosely.

The slightest relaxation in the grasp will often let the racket turn in the hand while making a stroke, and it is a failure in consequence. It should be held by the extreme end always, the "butt," or leather binding at the end, resting against the ball of the hand.

For all forehand strokes, or those made when the ball is on the right side of the body, the hand should rest diagonally along the handle, with the first finger separated from the others and extended an inch or two farther along the racket, but also wrapped around it; the finger should never extend its full length along the handle, as we sometimes see beginners doing. The finger-nails, when at rest on the handle, should face, at the moment the ball is hit, in the direction in which it is to fly.

For backhand strokes—those made when the ball is on the left side and the arm and racket must be drawn across in front of the body—the fingers should be closer together, and the thumb extended out straight along the handle behind the racket, in order to give more force and better direction to the ball.

The start of the forehand stroke in lawn-tennis

In backhand play, the second or middle knuckles should face, when the racket meets it, in the direction in which the ball is to be driven.

In changing after one stroke for another on the opposite side, it is necessary to shift the grip somewhat, but this is easily accomplished as the racket is carried across in front of the body. It is the custom of almost all good players to balance the racket between strokes in front of the body, with the upper part of the handle at the splice—as the fork where the wood of the handle spreads out into the frame is called—resting lightly in the left hand.

After every stroke it is well to return the racket to this position, and the shift in the grip between strokes will never be found difficult if this is done. In the heat of the play the effort of changing the hold becomes almost unconscious, and does not distract attention from the strokes themselves. Nearly all experts condemn as bad form the habit of playing both forehand and backhand strokes with the same grip.

In actually making the stroke the racket should start as far behind the point at which the ball is to be hit as possible, and swing as far beyond it after the blow as the full reach will permit. In forehand strokes the full length of the arm should be extended behind the body to start the swing with plenty of impetus, and the stroke should be finished well up over the left shoulder, the racket even turning in the wrist and dropping down back of the head to stop its impetus.

The swing for a backhand stroke should be almost exactly the reverse, the racket starting over the left shoulder and ending at the extreme length of the arm extended out beyond. The body, however, should be turned in exactly opposite directions, so as to face the ball for each stroke, and the position of the feet should be shifted so as to give the firmest balance and the freest motion of the body. The feet should be spread well apart, and the body bent forward at the hips just before the ball is struck, so that its weight is added to the impulse of the racket in making the stroke.

The end of the forehand stroke

As in golf, the weight of the body is carried on the rear leg and directly over the foot before the stroke, and as the racket swings toward the ball it is thrown forward, shifting to the other, so the added force of the body greatly increases the power of the stroke. A long swinging sweep of the arm and racket should be cultivated so as to meet the ball squarely and with a powerful impact as it comes toward you.

All side motion of the racket is lost power; the head of the racket and the hand that guides it should travel as nearly as possible in the direction the ball is to go, just before the stroke, while actually hitting the ball, and as long as possible after the impact. The follow through is nearly the same in tennis as in golf, and quite as important. Greater freedom in swinging the weight of the body while making the stroke is possible in tennis, for the left arm is free to help recover the balance, while in golf both are required in holding the club.

A tennis stroke is made while the body is

in motion, too, instead of being still, as in golf, so the weight is carried still farther forward and checked by bringing the rear foot out in front of the other. In making a fast tennis stroke forehanded, the weight starts on the right foot, shifts to the left as the ball is hit, and is finally checked again on the right, which takes a step forward to recover the balance just after making the stroke.

In making lawn-tennis strokes, it is vitally important to keep away from the ball. One of the most common errors among beginners, and even with some experienced players, is that of getting too close to the ball while playing. The cramped elbow that results from this ruins many more strokes than are ever spoiled by being too far away from the ball.

A splendid maxim laid down by an expert is, that every player should go to the ball in making a stroke, and never let the ball come to her. Even when she finds herself in the right position to take the ball, it is better to step back as it approaches and then forward again to meet it, for this insures the correct

position, with better speed and direction, and it keeps the weight moving forward when the stroke is made. If the flight or the bound of the ball is a little farther than calculated, the player will still be in the right position and not too close. In every stroke of the game, the position should be that of meeting the ball; no fast stroke can be made while moving backward, or even with the weight thrown backward.

The actual position of the racket in the hand while the stroke is being made is very important. In the preliminary swing, and in hitting the ball, the head of the racket should be nearly level with the wrist, and the end of the swing should finish with the racket well above the wrist. This requires an upward motion of the racket's head as well as of the forearm, and it is this motion that lifts the ball over the net, while the turning of the wrist to one side or the other directs it to the right or left.

As the racket meets the ball its head should be drawn sharply upward, so that the

strings are dragged across the face of the ball while they are in contact with it, and this slight side motion gives the ball a twist that keeps it from sailing, and makes it drop soon after crossing the net. In some of the lift strokes or drop strokes played by experts, like the famous Lawford stroke, for instance, this drop is much exaggerated, and the ball describes a rainbow arch in its flight, dropping suddenly after crossing the net. Much power is wasted in such strokes, but a little twist is generally necessary to hit the ball hard and still make it fall inside of the court-lines.

The height at which the ball should be taken depends on the height of its bound, which in turn depends on the hardness of the court. On most grass-courts, the bound in fast play reaches about to the knee, and this is the best height at which to hit the ball. Even on harder courts—of dirt, sand, or boards—it is better to let the ball drop to this height before hitting it, although the longer bound keeps the player farther back in her court, which is not often desirable. Sometimes it is

The start of the backhand stroke

necessary to hit the ball at the level of the hip to prevent being forced back too far from the net, but no stroke should ever be made underhand with the ball higher than the hip.

The eyes should be kept on the ball all of the time as it approaches; even up to the time of hitting it one should watch the ball, not the racket or the opposing player. It is sometimes necessary to look up for a second to see the direction in which it is to be placed and where the opponent is, but this should be done before the stroke begins, not while it is being made. A player often reads her opponent's intention from the direction in which she is looking, and if she looks where she plans to place the ball, she may betray her thoughts, and the opponent anticipate the stroke by going directly to that spot.

Perhaps the best way for one who wants to play tennis well is to practise strokes against a blank wall—a high fence, the side of a house, or some solid obstacle of that kind—batting the ball up against it again and again, and hitting it from the bound each time it returns.

Nothing can possibly afford better practise than this kind of play. Experts use it constantly in the spring, and find it a better way of getting into form, of "getting their eye on the ball," as they say, than even regular practise on a court. The ball always comes back at the corresponding angle to that at which it struck the wall, and with much greater regularity than any human opponent could return it.

In all forms of practise, whether against a wall or an antagonist, the method of making the strokes should be kept in mind all of the time. Every stroke made in bad form is just so much wasted practise, and if a faulty style is contracted, the longer it is allowed to continue without correction, the more dangerous it becomes. Bad form in lawn-tennis is as difficult to overcome as bad habits in anything else. Some of the simplest and least offensive of mannerisms too often develop into injurious habits if not checked at once.

Holding the racket loosely in the hand, swinging it or twisting it sidewise before mak-

The end of the backhand stroke

ing a stroke, jumping a little just before the stroke instead of while it is being made, taking the eyes off the ball, and even momentary lapses of indifference while playing, are all dangerous habits to contract, and each will develop into a bad fault if not checked at once.

The questions of placing the ball and of covering court, so as to prevent the opponent from outplacing you, are very important, and both permit unlimited study; in fact, the cleverest of tournament players never stop working on these problems. After every stroke, from one side of the court or the other, the player should immediately hurry back to the center of the base-line so as to be ready to start for the next ball, no matter where it is placed. If she is caught too far away from the center, her opponent will surely win the stroke by placing the ball to the other side of the court and out of her reach.

Not long ago I was surprised to find that one of the best of the American women players—in fact, an ex-champion of the United States—repeatedly stood still after making a

stroke from one side of the court, and waited to see the result of her play, instead of hurrying back to the center in anticipation of her opponent's next stroke. By this error she constantly left her court open at the opposite side for a well-placed ball that would win the point.

When badly pressed for time, or far out to one side of the court, a lob is always useful, and it gives a player plenty of time to get back into position for the next play. Women should all learn to lob well, as it is an invaluable stroke against others of their sex. No woman can smash a deep, well-lobbed ball hard enough to kill it, and the lob is such an easy stroke to learn that it offers a perfect defense at all times.

Volleying for women is really only useful in doubles. I have seen girls try to volley in single matches, but a deep lob always prevented their doing so effectually; and it is so much easier to lob well than to volley well that the stroke is practically useless against any player who can lob, unless the net player

has a partner to return the balls that go over her head. No woman can back up enough to smash a well-played lob, if she is close to the net; and it is not only ineffective but very tiresome to turn around and run back each time an opponent lobs, and return the ball after it has bounded.

In doubles, however, volleying is useful, for then one of the partners, when two women play together, or the woman in a mixed double, should be at the net most of the time. With a strong partner to back her up by returning balls that are out of her reach, she is not only safe at the net, but very often a winning factor in smashing short balls. English teams usually play with the man at the net in mixed doubles, but the most successful pairs in America invariably play with the woman at the net and the man back.

An overhand service is practically necessary for those who want to play the game well, although some English women learn to serve underhand with such a sharp twist that it is difficult to make a hard return from the

erratic low bound. The ball should be thrown up in the air as straight as possible over the right shoulder for the overhand service, and hit just as it pauses in the air before falling. To throw it much higher and hit it as it falls is much more difficult and less effective.

An overhand service should be made as fast as the player can control the ball within the boundaries of the proper court. The second service, too, after a first fault has been served, should be made in the same way, but slower. To serve in a different way tends to upset the accuracy of the first service as well as the second, and weakens both.

It does not require great strength to play lawn-tennis well, and, contrary to popular impression, the speed of the ball does not depend much on the muscles of the player's arm. It is the long, true swing, with the weight of the body thrown into the stroke just as the ball is hit, that makes it fly so fast. Thin, frail-looking women sometimes play a much swifter game than the robust, powerful girl who stands straight and simply swings her arm

A fast overhand service

and racket at the ball. The stroke must be timed so that all the energy in the racket is concentrated just as the impact with the ball occurs, for this secures the greatest speed and the best direction and control.

As to dress for women in tennis, a short skirt is absolutely necessary in order to run about the court with any freedom. One or two of the best American players wear starched skirts of white duck, quite short, and they keep out of the way of the legs better than anything else—an important point to be considered in any game where running about and quick turns give the skirts a tendency to wind around the knees in a way that makes it impossible always to start quickly. A loose waist, preferably a shirt-waist, is also necessary to give freedom in the use of the arms, and it is much wiser to play without corsets, if possible, although it must be admitted that few women do so.

Rubber-soled shoes are a necessity, neither too loose nor too tight. Shoes that permit the feet to slide around inside are quite as uncom-

fortable as those which are too tight, and blisters will soon follow. It is better to get shoes a little loose and then wear thick stockings, which keep the skin from being chafed while playing. Leather straps over the instep often work up painful blisters, and plain canvas shoes with rubber soles are generally preferable to leather ones. Ties or low slippers give little support to the ankles, and therefore high shoes are best, especially if one's ankles are not very strong.

Mrs. Hillyard, the English woman champion, always wears gloves while playing, but I know of no other player, man or woman, who does so. It is much better to gradually accustom the skin of the hand to the constant rubbing of the racket, so it will not blister, and then no gloves will be necessary.

III

HOW TO SAIL A CATBOAT

YACHTING is always associated in most people's minds with a large boat and a uniformed crew of professional sailors, but neither is necessary for one to freely enjoy the sport. In fact, the Corinthian yachtsmen and yachtswomen who "paddle their own canoe" often enjoy their recreation more than those who employ others to sail the boat. With a small yacht one can do this without difficulty, and women are at very little disadvantage when compared with men in handling such a boat.

For those who live near any stretch of smooth water, nothing can offer more enjoyable sport than a small sailing yacht which can be easily handled by one person. There is always room for three or four passengers when one wants to take one's friends out for a sail,

and a catboat with a sail small enough to be easily hoisted by one person is the most convenient size.

For many years catboats were constantly spoken of as "death traps," but if those who condemned this rig for a pleasure yacht knew a little more about sailing, they would know that no other entails so small a risk of disaster. The prejudice against catboats arose chiefly from the fact that most sailing accidents occurred in them, but this was so because inexperienced persons often took out catboats and seldom yachts of other rigs.

As a matter of fact, any sailboat with a single sail "rigged fore-and-aft," as the sailormen say, will invariably go up into the wind if left alone, and this is the safest position for a sailing boat. Some of the new fin-keel boats are practically non-capsizable, and in smooth water, with the proper knowledge in handling a boat, and ordinary care, there is little or no danger with any catboat of good model and build. It requires only a thorough rudimentary knowledge of the art of handling a sail-

boat, and a cool head, to enjoy the pleasures of sailing with comparative safety.

The one cardinal principle that underlies all forms of boating is that of keeping a vessel's head up in the wind for safety. From the largest ocean steamer to the smallest rowboat, the one object of the man at the helm is to get her head into the wind whenever there is danger. This means to steer the boat around so that the bow points in the direction from which the wind is coming.

The waves are always caused by the wind and come in the same direction, so your craft will ride over them bow first if her head points into the wind. If she falls off, however—that is, if her bow points off in another direction—she will soon be in the dangerous trough of the sea, or with her broadside toward the wind.

Now when any catboat points up into the wind her sail flaps idly, because it is hinged at the mast and swings readily to leeward of the mast, so that it presents only its edge to the wind, not its side. It must be hauled up only when the boat is in the wind, and not until she

is ready to start and cast off her moorings should she be allowed to fall off—that is, to swing around so that her sail fills with wind.

Then if the sheet is hauled in, or "trimmed down," as the nautical people say, she will go ahead as soon as she can get under headway. Until she gets fully in motion, though, the boat will not quickly answer her helm—that is, steer accurately—but the faster she goes the less will the tiller have to be pushed one way or the other to alter the boat's course.

To make any sailboat go ahead, the full breadth of sail should be exposed to the wind, if possible. When the wind is blowing from either side or behind, the sheet should be pulled in or let out until the boom is as nearly as possible at right angles with the direction of the wind, or parallel with the waves. If she is going directly before the wind the sail is let out until the boom is at right angles with the course of the boat. It is only when going to windward—that is, when one wants to sail toward the direction from which the

Sailing a catboat close-hauled

wind is blowing—that the full spread of the sail can not be used.

Beating to windward is the most difficult work a sailboat has to do, and the theory of sailing must be understood thoroughly to handle her under these conditions. As any fore-and-aft rigged sail flaps idly when the boat is headed to windward, it is manifestly impossible to steer straight in that direction, for the sail will at once stop drawing, and the boat's headway will soon be lost. The substitute for direct sailing then is what is called tacking or beating, and this consists in sailing a zigzag course, which ultimately brings the boat to windward of where she started.

For this kind of work the sheet is trimmed down close, with the sail almost parallel with the boat, and the course steered is as close as possible to the point from which the wind is blowing. You can soon see how close you can steer, for as soon as the sail begins to shake—"when she luffs," as sailormen say—she is too close and will not keep her headway, so she must be held a little more off the wind. Each

tack brings you farther to windward, and the boat constantly crosses and recrosses the line you want to travel until she has worked up far enough in the desired direction.

The centerboard is a necessary adjunct of every catboat, and its use should be understood by every one who tries to sail. The centerboard is an American invention to take the place of a keel in a larger boat, and is really a movable keel. It serves to prevent the boat from sliding through the water sideways, and the more of it that is exposed to the water, the less will the boat make leeway, or slide away from its proper course.

Whenever the boat is being steered to leeward—that is, when she is sailing before the wind, or nearly so—no centerboard is necessary, and it may be hauled up, as then it only serves to slow up the speed; but when the course of the boat is across the wind, or up toward it, the use of the centerboard is necessary to make the boat travel ahead instead of sideways. It would be impossible to make a shallow catboat go to windward without using

her centerboard, for she would slide to leeward almost as fast as she went ahead.

With a steady breeze one can hold the sheet along the tiller with a turn around the cleat to take off the strain, but it should never be tied—made fast, that is—under any circumstances. It is to this piece of foolhardiness that most accidents in catboats are due. A squall comes along, and before the boat can be luffed up into the wind she is capsized, because her sail is tied in fast.

Sometimes in a steady breeze, and always in puffy wind, it is necessary to slack off the sheet when the wind blows a little too hard and you find that the boat is tipping too much. To be sure, the farther a catboat tips over, the less of her sail is exposed to the wind and the more of her side is in the water to resist any further effort to upset her; but at the same time it is not possible to luff in a second, and in a puffy wind it is wiser to slack off the sheet and spill part of the wind, and so right her again, than to let her tip too far over on her side while waiting for the squall to blow over.

It is almost always better to ease off the sheet, too, than to put the boat up into the wind, for if she loses her headway in the wind, she may hang there "in stays," as the sailormen say, and when she does fall off and her sail fill, she will not answer her helm until she has got well under way again. Without headway any sailboat is unmanageable and might easily be capsized.

It is very much easier to start a sailboat than to stop her, and considerable care must be taken in making a landing or coming up to any wharf or float with a catboat. Most small sailboats, however, are kept at buoys or moorings some distance out from the pier, and a rowboat tied there to take back the occupants when they are ready to come ashore again.

To come up to any buoy and tie up a catboat, one must take her down to leeward of the buoy and then luff up directly into the wind, and with the sail flapping, steer straight to windward up to it. Some experience is necessary to learn just how far a boat will shoot

The proper way to handle a boat when it blows

into the wind, and then one must calculate this distance to leeward of her buoy or anchorage, and catch the moorings with a boat-hook when the vessel has come up to it and lost her headway. If she is allowed to shoot beyond, you will probably miss the buoy and have to fill off and go around again to pick it up from the leeward side.

To land a sailboat at any pier or float is even more difficult, for then if she carries too far there is no room to shoot beyond, and she will crash into it and something must break. The momentum of even a small sailboat is much greater than it seems to one inside of her, and if she strikes head on to any wharf or float, she may smash in her bow like an egg-shell.

It is better to fall short of a pier a dozen times, and to keep on trying to fetch it, than to go too far and hit it hard once. That might mean the destruction of the boat, if not even more serious damage. In making any landing, it must always be remembered that a sailboat can only come up to the leeward side; should

this be the land side, or be unavailable for any other reason, it is impossible to land at that pier or float except by taking the sail down first, and this is a difficult task.

It is always best to lower the sail as soon as any landing is made or the boat is made fast to her moorings, unless she is to be taken out again very soon, and even then she should be watched all of the time. The wind may shift, and, filling her sail, send her ahead again unguided and do a lot of damage. If the wind is light and steady, and the boat is to be left for only a short time, it is sometimes safe to drop the peak-halyards until the upper end of the sail sags off idly, and then its drawing power is very much lessened.

The sail can only be safely lowered when the boat's head points directly into the wind, and then the sheet should be trimmed in close—with the centerboard all the way up, as it should be whenever it is not in use—so the sail will fall over the boat as it comes down, not in the water.

If the boat is to be put away for the night,

or is not to be used again for many hours, the sail should be furled and everything made snug before she is left. Upon the skill with which this is done depends much of a sailor-woman's reputation for seaworthiness. Only a landlubber will leave a boat with her sail in a heap on her deck, and it should be stowed away carefully every night if it is to be saved from the dews and rains that rot the canvas.

Before the sail is lowered for furling, the shears, or boom-crotch, should be set up on the stern, and the peak-halyard and topping-lift lowered until the boom rests in the crotch. Then the sheet should be hauled in tight and made fast until the spar is held firmly in place there, so that no amount of wind or sea can shake it loose.

When the sail has been fully lowered, the canvas should be pulled through all to one side of the boom, preferably the starboard, or right-hand, side of the boat. Then it should be stretched out toward the stern by pulling it from the outer edge or leech, until it lies along the boom in folds. By catching hold of

the under part every foot or two and pulling over the loose part of the canvas above, it should be gradually rolled up until only the outer layer of the canvas is exposed. Then it should be rolled up on top of the boom, and with the gaff laid down close on top of the canvas, it should be tied down every few feet with stops, which are short pieces of loose rope or bands made for the purpose.

The whole sail will then be held down firmly just above the deck, and the halyards and topping-lift should all be drawn taut and made fast, the tiller unshipped, and the center-board made fast fully up, before the boat is left for the night. The boat should never be left until everything movable is taken off her deck and stowed away in her cockpit, and a last look is given to make sure the moorings are made fast, so that there is no chance of the cable slipping and of her getting adrift.

For all running-gear—loose ropes that work through pulleys—cleats are provided to make them fast. Excepting of course the sheet, which should never be made fast when

The dangerous kind of sailing

(Note the unsteady position, and the sheet made fast)

under way, ropes should be wound on their cleats, kite fashion—that is, as a boy winds the cord of his kite, or as one winds a fish-line on a stick—criss-crossing from one end to the other of the cleat, and each cross passing over the previous one, so that it binds with the friction.

To prevent the end from slipping, it is best to finish with a half-hitch, as it is called. This twist of the rope is constantly used in all boating matters, and is very useful for many other purposes where a string or rope is used. It consists of simply making a loop of the rope with the free end turned under the fast end by inverting the loop, and then putting it over the end of the cleat and drawing it down tight. The strain serves to bind the rope tighter, and the harder the pull comes from the fast end, the stronger the rope will hold. Two of these in succession, a whole hitch, will hold almost any strain when drawn tight. In making a small boat fast to a wharf or anything of that kind, it is the most useful kind of a knot.

For furling or reefing a sail there is a special knot which must always be used, and which is very little trouble to learn. Under no circumstances should a hard knot ever be used on a boat, and it is better not to use a square knot for furling; while it must never be used for reefing. The reefing knot is simply a single twist or half-knot, with a half bow-knot on top of it, practically the same thing that is used so often for tying ordinary shoe-laces. The bow-knot on top can be pulled out in a jiffy with one jerk of the loose end of the loop, and the half-knot opens then without any difficulty. This knot never slips, yet can be loosened in a second without much effort. It is not safe, however, to trust a reefing knot for making a boat fast, or anything of that kind, for it might then work loose by the uneven tugging strain and set her adrift.

One thing above all others must be remembered in sailing either a small boat or a large yacht. You must have enough water under her. Sailing in a thousand fathoms of water is far safer than in only a foot more than the

boat actually requires to float her—what she draws, in other words. There is no more danger of drowning in ten thousand feet of water than in ten feet; on the contrary, the deeper the water, the more buoyant it is.

If you want to avoid danger with a catboat, keep her in deep water. One need then only watch the wind and the sail to avoid danger, while if part of the attention must be distracted to watching out for shallow water where the boat may go aground, then it will be difficult to give as much attention as is necessary to the actual sailing of the boat itself.

And, finally, above everything else, remember one thing: The watchword of safety in yachting is eternal vigilance. Whoever is responsible for the safety of a party in a sailboat should devote all of her or his attention and energy to watching out for possible danger. If it does come, in the shape of a storm, or a squall, or a collision, the golden rule to be remembered is to keep your own head cool, and your boat's head up in the wind.

IV

THE USEFUL ART OF SWIMMING

THE art of swimming is an accomplishment that is of more vital importance to man—and woman, too, if she live near deep water—than any of his other sports. The fact that it is also a popular pastime should make it the most cultivated of all man's recreations, and yet it is not; on the contrary, only a small proportion of our people know how to swim, and not even a large percentage of those who live near the deep waters by which we are surrounded and invaded.

Swimming is not natural to human beings, as it is to most animals. Throw overboard a horse or a dog which has never been in the water before, and it will swim. The natural walking efforts of a four-footed animal keep it afloat and force it ahead. With man it is

different; he must learn to swim just as he must learn to walk and to talk.

In nine cases out of every ten our educations are sadly neglected in this respect, and the lessons in walking and talking are almost invariably followed by unnecessary accomplishments, which are drilled into us to the neglect of that which might some day be the means of saving our lives, perhaps even the lives of others as well.

For those who "go down to the sea in ships," swimming is a necessity and at the same time a pleasure. One can not conscientiously urge any woman to enjoy the delights of boating or the exhilaration of bathing until she has mastered the art of keeping afloat in water. To swim, even to swim well, is very much less difficult, however, than is generally supposed by those who do not already know how. If one begins properly the task of learning, the art will not be found difficult. The first requisite to success is absolute confidence in a few truths that should be thoroughly digested and appreciated before the attempt is made.

First, there is no reason to fear deep water; that which is six feet over one's head is no more dangerous than that which is only six inches; in fact, the deeper salt water is, the more buoyant it is. Second, it should be realized that all human bodies will float rather than sink if perfectly inert, and none will sink far below the surface so long as the lungs are kept full of air.

Without going too deeply into the technical side of the matter, a little explanation of the real facts may go a long way toward instilling this very confidence that is imperative in prospective swimmers.

The floating capacity of a human body depends on the proportion of its bulk that is made up of bone. Bones are heavier than water, and will sink of their own weight unless supported; while flesh and fat will float of their own buoyancy unless drawn down by some heavier substance.

A very thin woman, whose bones constitute the greater proportion of her weight, might settle down until nearly all of her bulk

was submerged, but not farther; while a stout woman would float naturally, more or less of her body being under the surface, according to the proportion of flesh and bones. So long as the lungs are kept full of air, however, no human body, if inert, will sink entirely beneath the water; it is their useless struggles to keep up that drag so many people under the surface.

As it is our bones that cause the tendency to sink, the arms, legs, and head are the heaviest, being made up chiefly of bone, while the trunk of the body gives us buoyancy. Really the head is the sinker of the human fish-line, for its weight is composed almost entirely of bone, with little or no flesh to help support it. In order to float the body without effort, it is necessary to submerge practically all of it, as well as the arms and legs; even then the head will not be supported entirely out of water unless the swimmer be very stout.

The head must be dropped down until it becomes three-quarters submerged, and this

can only be done without effort when turned over on the back, so that the remaining quarter will include the mouth and nose, the openings for breathing. If people would let themselves settle down in the water until only the nose and mouth were above the surface, they would only have to keep the lungs inflated to float naturally.

When one wants to swim with the back up, it is necessary to make some effort to keep up the head, for most of its bulk must then be above the surface in order to breathe. It is the arms which do this part of the work, not the legs, as is so often believed. It is a common error for inexperienced swimmers to suppose that all of their progress is due to the efforts of the arms, and that the feet are used simply to support the weight.

On the contrary, it is almost exactly the opposite way, and the prevalence of this misconception by women accounts frequently for their inability to swim rapidly. Many of them simply flop their legs straight up and down after they have learned to support them-

selves in the water, and then wonder that their arms become so tired and that they make so little progress as compared with their masculine friends.

Naturally it is best to learn the use of the arms first, for it is most important to support the weight of the head above the water before the effort to progress is attempted. Once the difficulty of maintaining the body's buoyancy has been overcome, the method of making progress can be taken up, with the question of speed left for the final lesson.

There are many methods of using the arms in the water, but the most useful of all, and certainly the most practicable for women, is the well-known breast-stroke. This is the most natural method of swimming, and at the same time the most economical of strength, although it is not so fast as the side-stroke or the overhead stroke.

The motion of the arms for this breast-stroke is familiar to nearly every one, but it has so often been corrupted and cut short and altered that it would be well to describe it

minutely for the benefit of those who purpose learning to swim without the help of a professional instructor.

The stroke is started with the arms both stretched out to their full length before the chest, the palms of the hands flat against each other and the fingers closed tightly together. As the sweep begins, the palms open and turn face downward, and then are beveled outward at an angle of forty-five degrees, or halfway between the perpendicular and the horizontal.

With the fingers still closed tightly together, the arms make a full circular sweep outward and backward, still stretched to their full length, until they are directly opposite each other and at right angles to the body, each having traversed one-quarter of the full circle.

When straight out from the sides they stop and are drawn in again rapidly, the wrists bending so that the hands will follow in the wake of the arms, and not catch the water in returning to place. The elbows drop down to

the sides and the forearms close in under the chest until the palms meet again, when the arms are thrust forward once more, and the stroke is repeated.

This exercise can be practised while standing on dry land; and with any experienced swimmer to criticise and correct errors, it should soon become practically mechanical, requiring no thought or attention to be repeated indefinitely.

The most difficult thing for beginners to appreciate is that it can be made very slowly and still serve its purpose of keeping the head afloat. The beveled palms press the water downward as well as backward, and so do double duty. The less support that is required—either because of the fat of the swimmer, her lung capacity, or the partial submersion of the head—the more useful will be the arms for progression, and the less will they have to be beveled downward.

A stout woman who floats naturally far enough out of water to breathe comfortably with the face downward need hardly bevel the

hands at all, and all their energy can be exerted to push the water backward and the body forward; while, on the other hand, a very thin woman will have to use all of the efforts of her hands to keep the head above water, and depend on the legs for progression.

Once the motion of the arms has been properly acquired by practise on land, the best method to learn their use in the water is to wade out up to one's armpits and turn the face toward shore. Then launch the body forward and try to support the head in the water by the efforts of the arms with this stroke; it is not necessary to try to progress until one has learned to keep up.

Every time it is tried the strokes should be made slower until one can support the body with not more than twenty strokes to the minute. After this experiment has been successful often enough to win some confidence in the water, it is well to turn the face alongshore and swim parallel with the beach in water about four feet deep.

An experienced swimmer can materially

help a beginner by supporting her while she is learning the strokes. This should not be done, however, as we so often see, by putting one hand under the chin, for the helping hand not only interferes with one of the swimmer's arms, but also makes a beginner depend too much on a support for the head, and not make her hands do their proper work. It is better to hold the pupil at the waist or chest, either by a belt around her waist, or by gripping the back of the bathing-dress; the skirt-band generally offers a good opportunity for this.

A beginner almost invariably forgets to use her hands if she thinks of her legs, and *vice versa*. While she is learning the use of the arms, it is well for her to try to kick too, but until she has properly mastered the stroke for the arms, her attention should not be distracted from them by trying to correct the leg action. The use of the legs would best be taught separately, and then the two combined.

The strokes of the legs are more important in many ways than those of the arms, and no one can become a really good swimmer until

she has fully mastered the proper use of her legs in deep water.

Expert instructors declare that they depend almost entirely upon the legs for progress when using the breast-stroke, and one has only to watch them in the water to realize why they move along so much faster than others. Their kicks are much more energetic and much more complete than those we see even when watching good amateur swimmers.

The correct stroke of the legs is exactly like that of a frog's hind legs. Watch a frog and copy his style; you can not do better. The legs are drawn up together slowly, not with a jerk, until they are gathered in close under the body. Then with a sudden, quick spring they are shot out behind, the ankles being turned so that the soles of the feet present as flat a surface as possible to the water, and so offer more resistance from which to make progress.

As the kick is made, the legs should be spread out in the shape of a letter V, but not allowed to sink far down under the surface of

The correct costume for swimming

the water. If they kick downward at a sharp angle instead of out straight behind, much of their energy is wasted in unnecessarily forcing the body up and out of the water instead of forward through it.

The kick should not end until the legs are absolutely straight, and then they should be drawn together quickly at the end of the stroke until they actually touch. This last part of the leg stroke is generally omitted by all but the most expert swimmers, yet it is most effective in forcing the body forward through the water. The water is pushed out behind, and its resistance adds materially to the energy of the kick.

When the stroke is finally completed, the legs are drawn up again, like those of the frog. The knees bend up under the body, the lower legs behind the upper, the ankles being turned like the wrists, so that the feet follow in the wake of the legs and do not displace more water, which would only act as a drag. The legs should be drawn up slowly after the kick, so as not to retard one's progress through the

water. If they are brought in quickly, like the arms, the stroke becomes jerky, and the body progresses only in short, sharp jerks, stopping between the strokes.

The best method of learning the motion of the legs is to hold on to some raft or float, and drop overboard until the body is all submerged to the chin, and only the hands and part of the arms are above water. Then kick slowly but in regular time, and you can tell from the pressure against the arms, as they rest on the float, how much forward energy the legs are producing.

Great care should be taken to complete the full stroke with each kick, closing the legs tightly at its end, in order to get all the energy possible from the work; and it is wise to keep making the strokes slower until you make no more than twenty to the minute. Still a better variation of this method of learning the use of the legs for swimming is to get a large life-preserver, a floating log, or an idle rowboat, and resting both hands as before on that, kick with the legs, and note the prog-

ress of the body and its support through the water.

Even after the two motions are mastered, it is not always easy to swim alone. The difficulty is to work both arms and legs together as you are able to do them singly. The stroke of the legs should begin when the arms have traversed about half of their sweep, and this must be timed so that it begins at exactly the same point each time, and the same number of strokes is made with both the legs and the arms.

It is better to get some friend to hold one up in shallow water, and gradually learn to use both strokes in proper rhythm until the friend finds she can take away the support without embarrassment to the learner. Even then it is not wise to venture out into deep water until thorough confidence has been gained, and one has made many tours without help around the shallow waters. Sometimes the mere knowledge that the water is "over your head" for the first time causes a fright that makes the beginner forget all she has learned about

swimming, but this soon wears off, and the needful confidence follows not long after. Then one begins to realize fully that deep water is no more dangerous than shallow.

Diving requires, first of all, a good knowledge of swimming, and should not be attempted until one has thoroughly mastered the simpler art. The secret of success then is to keep the knees stiff in jumping, to keep the lungs well filled with air in going down, and to protect the head with the hands over it.

A good dive is made only when the body follows into the water through the same opening made by the hands and there is little splash as it goes down. To do this one must dive straight, the legs straightening out after leaving the raft or float and following the body into the water. The head is really the rudder in diving, and when you have gone down low enough, you turn to come to the surface by throwing back your head. This makes the body turn under water, and if the lungs are filled with air, it will come to the surface at once, head first.

Floating is much simpler than diving, and depends entirely upon the proportion of bones and flesh in the swimmer, as before explained. A stout person can float without the slightest effort or difficulty, while a thin person must keep the head from sinking by a slight motion of the hands just under the sides, and a stiffening of the neck.

In any case, it is imperative to let the head sink down until the ears and most of the top and back of the head are submerged. With only the mouth and nose above the surface, one can float in salt water, no matter how thin, if the body is allowed to relax entirely and the lungs are kept filled with air.

Swimming, in salt water particularly, is one of the most healthful of all sports. The vigorous exercise makes the body perspire, and the impurities are carried off at once and washed away by the water. Salt is well known to be purifying and strengthening, and ocean baths are frequently prescribed by doctors for people whose health is bad. However, simply pounding about in the breakers of the

ocean surf is a poor substitute for swimming; and when a woman has learned to go out beyond them in safety and swim in deeper water, she will not again care to be hammered around in the surf near the shore.

It is particularly important that nothing tight should be worn while swimming, no matter how fashionable a dress may be for bathing. The exercise requires the greatest freedom, and a swimming costume should never include corsets, tight sleeves, or a skirt below the knees. The freedom of the shoulders is the most important of all, but anything tight around the body interferes with the breathing and the muscles of the back, while a long skirt—even one a few inches below the knees—binds the legs constantly in making their strokes.

It is worth knowing, perhaps, that all undertows and sets, the dangerous currents which are so often encountered on the seashore, are well under the surface, and the most effective way to avoid them is to swim with the body close up to the surface of the water. One

other warning: Never dive into any water until the depth of it has been thoroughly tested and known to be not less than six feet. Even then one's hands should always be kept above the head for protection when diving, until a turn is made to come to the surface.

V

THE USE AND ABUSE OF BICYCLING

DESPITE the undeniable fact that bicycle riding among women is not so popular now as during its fad period a few years ago, the sport has lost none of its charms or physical advantages. There can be intemperance in sport, in exercises, even in pleasures, and it was this very excess in the immoderate use of the bicycle a few years ago that caused the reaction among the more exclusive women in our big American cities. They caught the bicycle fever and soon ran the fad into the ground, with the inevitable result. Rationally enjoyed, cycling is one of the most attractive and most healthful exercises ever available for women, but, like everything else, it quickly loses its charm when one has overdone the thing.

The fear of physical injury, which spread terror through the ranks of feminine cyclists a few years ago, has now largely passed away, for we have the approval of some of the most eminent medical specialists in favor of the wheel. No less an authority than Dr. G. M. Hammond, the New York specialist in mental and nervous diseases, declared in an address at the Academy of Medicine: "Little need be said about the rational use of the bicycle by healthy persons. It is only when the wheel is improperly or immoderately used that it constitutes a source of danger."

In badly-shaped and ill-adjusted saddles and the desire to scorch are hidden the principal dangers of wheeling. An uncomfortable saddle should never be ridden, no matter how much it is recommended by one's friends. Because it suits one, there is no reason why it should suit another. The adjustment of the saddle is quite as important as its shape. It should not be tipped forward so as to throw the weight toward the handle-bars, nor back so that it becomes necessary to hold one's

weight from sliding backward. It should bear the body upright so that no effort or extra pressure in any direction is necessary to keep from sliding off. In fact, it should be a seat rather than a saddle, and as comfortable as possible.

Nothing can be more dangerous than riding with the saddle-post too high. The correct length of reach can easily be tested by sitting upright on the saddle with one pedal down at its lowest point. With the leg straight, the arch of the foot under the instep should rest naturally on the pedal, without leaning the body over to lengthen the reach, or bending the knee to shorten it.

It is important also that the saddle be adjusted far enough forward so that the rider sits directly over her work; nothing is more tiring than riding a bicycle with the saddle too far back or too low. In either case the knees bend too much and the muscles of the legs soon become exhausted. If the saddle is too far back, it is necessary to lean forward in the ungraceful and unhealthy position of the scorcher in order to reach the handle-bars.

Despite the legion of instruction books that have been published and the number of schools for learning to ride the bicycle, many women who ride wheels make the same old mistakes. They do not sit upright on the machine as they should, with the shoulders thrown back, the chest out, and the head erect. Not only is this the most graceful position for riding, but it is also the most healthful. Curiously enough, common sense and vanity, usually diametrically opposed to each other, are united on this point.

The woman who rides with her head and shoulders bent forward over the handle-bars, whether she scorches or rides leisurely, is not only hopelessly ungraceful, but she deprives herself of the healthful advantages of the exercise, for cramped lungs can not breathe properly, and the heart soon labors in this position.

It is really surprising how many women find it difficult to mount a bicycle properly, but the reason is very near the surface. Instead of taking it at the proper height, they in-

sist on having the pedal too low when they put their weight upon it, and the result is that the wheel does not get enough start before they are on the saddle. The other pedal will not turn past the dead center, the wheel stops, and they are forced to jump off again hurriedly.

The right pedal should be fully two-thirds of the way up to mount properly, and the whole weight should be kept on that pedal until it has dropped half-way down in its course. Then the machine will start ahead quickly before one takes the saddle, and its force will be enough to carry the left pedal around past the top of its turn, and the other foot's pressure on that at once gets the wheel under full headway.

Brakes should always be used on bicycles for women, and those which clutch the tire firmly, so as to stop the wheel in a short distance, are particularly desirable. Too much use of the brake, particularly when the wheel is going fast, wears out the front tire before its appointed time, but it will be found very useful in dismounting hurriedly.

The mistake that most women make in mounting a bicycle

(Note the pedal dropped more than half-way)

For the ordinary dismount, the bicycle should be slowed up and the weight thrown over to the left foot when the pedal is at the bottom of its circle. As it begins to rise, the weight of the dismounting rider will check the progress of the wheel, and she can step quietly to the ground. It is not necessary to jump off or to fall off; if the wheel is stopped properly, either with the brake or by the use of the body's weight, the rider can step off just as gracefully and with as little danger as she steps off a curbstone.

One of the most familiar difficulties is that encountered so frequently in merely leading a bicycle. Not one woman in ten leads a wheel properly, and for that matter very few men do either. Most women lean over and with considerable effort push the machine with one hand on each handle-bar, but this makes them bend the body uncomfortably, or they are so close that the idle pedal constantly strikes their shins as they walk alongside of the bicycle. To avoid this, some of them lead their wheels by one handle-bar, but it is obviously

impossible to guide it properly in this way; others put the right hand on the saddle and the left on the bar.

The correct method, however, is different from all of these. The wheel should be grasped by the center of the handle-bar, with the fingers turned up and divided around the head-post. This way of leading keeps the machine farther away from the body, so as not to interfere with walking by it, and at the same time guides it most easily. If one wants to lead an idle wheel, while riding (though it takes an expert rider to do so in safety), this is the best way in which it can be done: The instant it swerves too close or too far, the front wheel is lifted from the ground, and the idle bicycle immediately recovers its balance.

The public parks and drives of our big cities offer many attractions for wheeling, and nothing is more invigorating than a short spin over the well-kept roads in the early morning or late in the afternoon, particularly in the spring and fall. The healthy glow and stimulated energies bring new life and enthusiasm

to the house-moth so long cooped up by the winter. The lungs drink in the pure air and the heart pumps fresh red blood through the veins with new exhilaration.

Deep breathing expands and develops the lungs, and a light perspiration is good for the body, for it carries off the impurities through the pores of the skin. A cool bath immediately after exercise, before the perspiration is allowed to dry off, washes away these impurities and is wonderfully refreshing. In moderation nothing can be more beneficial than wheeling; over-indulgence is the only thing to be feared.

When the summer is fully under way, touring on bicycles is one of the most enjoyable means of spending a short vacation. Few can afford to enjoy the English and Continental tours that have so often been described, but there are hosts of beautiful rides here at our own doors. It is not possible to see the country so well in any other way, and those who have never made a tour through the famous Shenandoah Valley, for instance, or down the

Delaware Valley, have pleasures yet in store for them, before they sigh for other fields to conquer. In these days when so much is being done to improve the roads for cyclists, it is rather the exception than the rule to find places that are not ridable. The powdered bluestone roads are almost as smooth as the proverbial billiard-table, and seldom dusty.

Following the Delaware River down fifty miles of its course, from Port Jervis to the Water Gap, you are constantly in a land of sunshine, with the cooling river close at hand if the sun becomes too warm. There are scores of other tours quite as delightful, valleys through which run rivers being the most available, because the roads are generally less hilly there.

Down the Shenandoah turnpike, from Staunton to Winchester, you pass through the smiling valley for a hundred miles, the "pike" running between the Shenandoah and the Blue Ridge Mountains, with charming scenery on either hand. Historic spots made famous by the battles of the civil war follow each

Touring over picturesque country roads

other in close succession, and you almost imagine yourself with Sheridan when the farmers call out, in answer to your inquiry, that Winchester is only "twenty miles away."

In England the parcels' post, which is so admirably run by the government authorities, saves the necessity of carrying much luggage on the wheel, but over here it is necessary to take a small bundle of clean clothes along with you. With a square of waterproof cloth, such as gossamers and piano-covers are made of, it is a very simple matter to wrap up a few clean clothes, a tooth-brush, and the few other trifles which are indispensable, into a package small enough to be conveniently carried on the back of the bicycle. In such a cover, too, they are always safe from rain.

A touring party with women among its number should confine its daily runs to not over twenty-five miles, and if the country is hilly, twenty will be found quite enough for a day's ride. When the distance is made too great, all the pleasure of the ride is lost in the hard work of pushing the wheel. The towns

are generally so close together that it is quite unnecessary to map out a day's run, or to decide upon the objective point until it has been reached. If the heat of the sun or a storm cuts short the ride, the next town is generally close at hand, while it is seldom far to the nearest repairing-shop if any of the wheels should break down.

If one would enjoy a week's vacation in the open air, nothing will offer more genuine pleasure mixed with healthy exercise and new scenes, than a bicycle tour through one of our many picturesque valleys.

VI

BASKETBALL FOR YOUNG WOMEN

THE value of basketball as a training for young women was truly summed up by Miss Senda Berenson, the director of physical training at Smith College, when she declared:

"Now that the woman's sphere of usefulness is constantly widening, and all fields of labor and all professions are opening their doors to her, she needs more than ever the physical strength to meet these ever-increasing demands; and not only does she need a strong physique, but physical and moral courage as well. Games are invaluable for women in that they bring out, as nothing else, just these elements that women find necessary to-day in their enlarged field of activities, and basketball is the game above all others that has proved of the greatest value to them. It de-

velops physical and moral courage, self-reliance and self-control, and the ability to meet success and defeat with dignity."

With the exceptions of such partial team-play as required for doubles in lawn-tennis and foursomes in golf, basketball is practically the only team game that is open to women. The spirit that pervades all sports of this description, that of sinking one's individuality in the larger unit of the team and of sacrificing individual interests to team success, fosters in women the very spirit of mutual assistance, of "sticking together," as we commonly call it, the lack of which is sometimes most noticeable in the sweeter sex.

Experienced teachers of basketball find this the most difficult point for young women to master. They learn the individual plays quickly, and soon become proficient in handling the ball; but the idea of not trying for a difficult goal oneself, when a near-by teammate would have a better chance of scoring if the ball were passed to her, seems absolutely new to most young college girls. Mastering

this new interest, this *esprit de corps*, proves finally to be the most profitable, though the most difficult, work of the feminine collegians.

But aside from this spirit there are wonderful physical advantages in basketball. Of all the team games that men play, for many long years not one was available for the women's colleges. Rowing, baseball, football, and all of the others proved too severe for feminine physique, although the girls dabbled in them occasionally with indifferent success.

Basketball, however, was available from the first, and it was not many months after its invention in 1892 that it was welcomed in all of the women's gymnasiums. The physical directors soon found its popularity a wonderful boon. The fascination of the game attracted the girls to the gymnasiums, and they took this exercise willingly and even eagerly when chest-weights, dumb-bells, and rowing-machines seemed a drudge. The excitement of the play permitted them more exercise with less fatigue, the advantage of which is apparent.

But the evil that threatened to ruin the game for men soon spread its somber wings over the girls' college gymnasiums. The element of roughness forced constant alterations in the rules that applied to men's play, and lack of organization permitted each college director to make her own changes, until there were almost as many codes of rules as there were centers of play.

But women's new spirit of organization soon came to their rescue, and the revised set of rules for the game has been accepted almost universally, placing the game once more on a uniform basis throughout the country.

There are only two important differences between the rules of the game for women and those for men. The modified code prohibits one player from snatching the ball away from another or striking it out of her grasp, and it also divides the playing-field into three equal parts, certain players being assigned to each and not being allowed to run across the boundaries between them. In order to prevent one player from keeping the ball indefinitely, since

her opponents are not allowed to take it away, the rules prevent her from holding the ball for longer than three seconds at a time, or bouncing it at a height lower than the knee, or more than three consecutive times at any height.

These rules require more passing, more clever team-work, and fewer of the individual star plays that marked the games under the older code, like that still used by the men. They prevent the girls from getting huddled together in one section of the field of play, and in keeping them separated, remove much of the danger of accidents. There was previously a tendency with nearly every girl to hold the ball when she got it until she was able to try for a goal, and constant fouls were the result. Combination plays were unused, and the ball was seldom passed from one to another unless the player having it was hopelessly blocked from any possibility for a goal.

As played now, the game is very much more interesting to both spectators and players. It equalizes the value of the different positions, does away with two of the greatest

sources of danger in the physical contact and the constant running permitted by the former rules, and encourages the cleverest kind of team-play.

The game begins with the ball thrown up into the air by the referee, who stands in the middle of the gymnasium floor with one of the centers from each side opposite her. Each tries to get the ball by jumping for it, and as soon as one succeeds, she passes it to another player of her side, who in turn dodges, passes, or throws the ball on again to another, and this is kept up until it reaches one of the forwards near the basket, and then a goal trial is made.

The greatest skill in the defensive work of the game lies in covering an opponent at all times so that she can not get the ball, or pass it to some partner if she already has it. Each player is assigned to a certain position in the field, and every position corresponds to a similar one on the other team. Each girl has an individual opponent, and they keep close together throughout the game, the others

being paired off around the field, according to their positions, the centers opposite each other, and the forwards opposed by the guards of the other team.

With five players on each side, there are four girls—two forwards and two opposing guards—in each of the end spaces, and two in the center; with six to a team there are four in each of the three spaces, there being two centers on each side, while with still larger teams they are apportioned by a similar system.

As soon as one of the players has the ball the others of her side all try to get uncovered—that is, to get away from their nearest antagonists, so that the ball can be safely passed to them. The other side is necessarily on the defensive until one of its members can secure the ball, and it is their duty to keep their opponents all covered, so that the ball can not be passed to them without interference. As the rules prevent the girl who has it from keeping the ball more than three seconds, she must try to pass it almost instantly,

and the action becomes very fast in consequence.

This covering of a player is not nearly so easy as it appears, for the opponent makes every effort to keep out from under cover, so that her services may be available for her team, and a clever player's dodging, turning, and twisting make life a burden for her opponent. The cleverer she is the more difficult will it be to keep her out of the game by this covering.

With the guards there is still another duty of this kind. As soon as one of the opposing forwards can get the ball she will make a try for a goal, for the forwards are placed very near the goal-basket, and it is their work to make most of the scores. Not only must a guard prevent her opponent from passing the ball to a free partner, but she must also cover any attempt to shoot a goal—that is, she must interpose her arm or her body so that her opponent can not shoot for a goal unobstructed. Most attempts at goals are spoiled by clever guards, but if the opposing forward

be cleverer than her guard, she often manages to dodge out from under cover and make a successful try for goal.

Once the guard has secured the ball from the opposing forwards, she must get it away from her goal and out of danger at all hazards. If her opponent keeps her so closely covered that she is unable to pass it safely to another of her own team, she should throw it up the field toward her antagonists' goal-basket, and thus offer her own forwards a chance to try for a goal if they can secure the ball.

The work of the guards is really the most difficult of all, and at the same time the least remunerative, since they can never try for goals, and their work is almost entirely defensive. Their success depends chiefly on the skill with which they can cover the opposing forwards, and there are so many different ways of blocking an attempt for goal that the position offers much chance for clever play. Indeed, they are the chief mainstay of a team's defense.

An absolute rule of the game forbids tack-

ling or holding a player in any way, and it is a foul to even put one arm around an opponent to interfere with her. A player can always stand in front of her, however, and so far as possible interpose her body or her arms between the ball and the direction in which it is to be thrown.

For any one to violate this rule of holding constitutes a foul, the penalty being a costly one, since the opponents then have the right to make a free throw for goal at a distance of fifteen feet from the basket. College players practise these free throws until some of them become so expert at it that they score frequently from this fifteen-foot mark. Fouls, therefore, are costly in this game, since a goal from one of these free throws counts one point in the score against two points for one made from the field.

Scoring a goal from a free throw is a very different matter from making one while the play is in progress. The rule requires that there shall be no interference with the player who tries for a goal as a penalty for a foul, but

the opponents make it as difficult as possible to throw one from the field. If one of the forwards can dodge or twist or turn so as to fool her opposing guard and get out from under cover, she shoots the ball at once for the basket.

This shoot of the ball is different from an ordinary throw, for it is made with an upward straightening thrust of the arms, a sharp twist of the wrists, and a little jump from the ground. The ball generally goes up slowly and arches over the basket; there is no need to make it go fast, for as soon as it has safely started on its mission it is out of reach. The basket hangs ten feet above the ground, and it is impossible to prevent a goal after the ball has once started up in the air truly.

There is only one effectual way to block this shooting for goal by the forward, and that is by reaching up over her head and covering the ball and the player's arms from above so that it is impossible to make the throw in the right direction. But a clever forward can often circumvent even such a

"cover" by turning quickly and shooting the ball up from under her arm. Occasionally this is varied by jumping backward out of reach or to one side; indeed, there are so many variations possible that the guard is kept constantly busy blocking each one. However, the three-second rule makes the forward decide at once and try quickly for the goal or pass the ball to her partner.

It is the duty of the center, after the ball has been faced and put into general play, to act as intermediate between the guards and the forwards of her own team. When an attack against her goal has been shut off, and one of the guards of her own team has secured the ball, it is quickly passed out to the center, who in turn passes it on to the forwards of her own side, so that they may start an attack of their own by trying for a goal.

The game thus changes with lightning-like rapidity, one minute on defense, the next ready to attack. The division of the playing-field, however, permits only the players in the section where the ball is in play to keep up

the constant exertion, and as it is soon passed out to a neighboring player in the next section, the scene of action shifts rapidly, as well as the kind of play required—defensive or aggressive.

These division lines have also another excellent effect on the game as modified for women to play. They equalize the importance of the positions as well as the amount of exertion required by the girls, and also encourage team-play wonderfully. Under the old conditions one or two star players of a team were always allowed to do the goal-throwing, and they were kept constantly on the jump from one end of the gymnasium or field to the other. If they were exceptionally good dodgers the ball was always passed to them in preference. All of the other members of the team acted in a sense as feeders for the star players. Now only the girls selected as forwards can do the goal-throwing, and they are not permitted by the rules to go outside of their own division, so their exertion is reduced to the minimum when the other side has the ball.

Occasionally the center of a team makes a long try for a goal from her central division of the field, if she has the ball and the other members of her team are so closely guarded that she can not pass it safely to any of them. These tries are seldom successful, as the distance is generally too great to make it probable that such a throw can be made with enough accuracy to go into the basket, which is only eight inches larger in diameter than the ball. In such a case it is the wiser play to dribble the ball once or twice until one of the partners can get uncovered, and then pass it to the forward to try for a goal from her more advantageous position.

The early development of the body, with the attendant strengthening of the lungs and the heart, is a great advantage to any young woman, and American generations of the future will inherit stronger constitutions from their mothers because of the increased interest in athletic sports among the young women of to-day, if only the pitfall of over-indulgence is avoided.

That "all work and no play make Jack a dull boy" has never been disputed. Jill suffers from the same monotony if her college work-days are not lightened by some recreation, and basketball is often the most welcome "play."

VII

PHYSICAL EXERCISE AND DEVELOPMENT

It is a cause of surprise to many people that our American athletic woman of to-day lacks much of the rugged health and physical endurance of her English cousin, yet the solution is not far under the surface. Outdoor sports among American women are of only recent adoption, and comparatively few of them have yet built up the physique that is needful for their full enjoyment, although we may look for better fitness in our sisters' daughters. Physical culture is rapidly becoming as much a part of the curriculum of women's schools and colleges as Greek and algebra, and the sons as well as the daughters of our next generation should have good reason to thank their mothers for strong constitutions. Abroad it is different, for English-

women have so long been devoted to outdoor sports that their physical vigor is now as literally "born in the flesh and bred in the bone" as in their brothers.

Entirely aside from any advantage in sports which might be gained, even when one does not intend ever to participate in them, an active outdoor life is the surest method of building up a rugged constitution that shall weather all storms and withstand fatigue in matters of every-day existence. Nature's prescription for good health is very simple: Fresh air and good food, with plenty of exercise to properly assimilate it, correct methods of breathing, and the strong development of heart and lungs that is sure to follow.

These are what give us the good health to laugh at all ordinary sickness, and the vitality and endurance to throw off any disease that may come through contagion. They make the physician with his drugs and artificial remedies unnecessary. A famous specialist once declared epigrammatically that the best way to avoid sickness was to keep in good health.

Yet, contradictory as this seems, it is but a wise application of the old principle of the ounce of prevention and the pound of cure, for nine-tenths of all ordinary illnesses are contracted only when the general health of the victim is poor, and the vitality low. It gives added confidence also to know that the gastric juices of a healthy adult will kill the germs of almost any contagious disease that can be taken through the mouth or stomach.

It is important that we should know the inward workings of the human mechanism in order to appreciate what is needed for this vigorous health that shall scorn sickness and drugs. The human body bears a striking similarity to a steam-engine. We take food into our stomachs for the same purpose that coal is fed into the engine's furnace, and the fuel is consumed by the digestive apparatus, or the fire, as you please. Just as the machine gathers power in the form of steam in its boiler as a result of the consumption of this fuel, so the body stores up energy in its muscular tissues and blood, taking from the

food certain heat-producing substances that furnish energy.

We use our muscles just as the engine does its driving-rods when the engineer turns on the steam. The human arteries, which correspond to the steam-pipes of an engine, carry the stored-up power to the muscles, and it is spent in producing any action directed by the brain, which is the engineer of the body. Just like exhausted steam, the spent energy of the body is thrown off in the form of perspiration, which condenses into beads of water on the skin when it reaches the cooler air. After it has done its work, the blood is hurried back to the heart through the veins—smaller steam-pipes leading back to the engine-boiler—is there heated afresh, purified by the oxygen of the air taken in by the lungs, and, charged once more with new energy for the muscles, is pumped out again on its round of the body.

Stop feeding the body with the proper kind of energy-producing foods, or give it only poorer fuel, and the muscles will gradu-

ally lose their power and usefulness, just as the engine would weaken and finally stop from exhaustion if poor coal or none at all were stoked into its furnace. To get all the good out of the coal and keep up a good pressure of steam, the engineer insists on a strong draft in his furnace, and those who study the workings of the human body find the same need for a strong draft in the lungs and plenty of exercise to make the digestion do its work thoroughly.

The parallel holds good throughout, and the body requires as constant care and close attention as the delicately adjusted steam-engine. Stop breathing fresh air and plenty of it, and the digestion will get out of order and work as badly as an engine-fire without the proper draft; stop using the muscles regularly, and they will grow as rusty as the unused driving-rods of the idle engine; cut a vein or artery, and the energy will drip out and weaken the power of the body as quickly as a leaking steam-pipe in the engine.

It seems almost unnecessary to prescribe

exercise in the open air for one who is looking only for health and physical development. Merely to move about energetically and breathe deeply is often enough. Competitive sports lend an additional interest that robs exertion of its effort, but walking, horseback riding, bicycling, rowing, swimming, and scores of other recreations furnish excellent exercise in the open air with beneficial effects. If one wants the competitive interest of a game, without the physical severity of violent action, golf will be found perhaps the best exercise, for it lures on the devotee to almost unlimited healthful exertion with an interest and variety that distract attention from fatigue, while it is never violent, and can seldom be injurious, as is possible with most other sports when overdone.

Lawn-tennis is very severe, and basketball scarcely less so. For fast play each requires a strong physique, with good development of heart and lungs, and either might be injurious if carried to excess. At no time during a game of tennis does the player have a chance

to rest, and all parts of the body and limbs are brought into rapid action that keeps the muscles busy and the heart working at high pressure. The same is true of basketball, which is almost as severe, and which has not always the open-air surroundings in its favor.

Bicycling, sailing, swimming, skating, fencing, and bowling, while they lack the interest of the competitive games, all furnish healthful exercise in much variety; but of these, again, two are always practised indoors, and so the advantage of fresh air is lost. Swimming, particularly in salt water, however, is in many ways the most healthful of all sports, for its surroundings are so beneficial. The body throws off many of its impurities in the perspiration that follows physical exertion, and in the water these are instantly washed away, instead of being allowed to dry on the skin, as is too often the case. Salt is also known to be very strengthening, and the body absorbs much of it in sea-bathing.

For any one who is fond of outdoor life,

exercise comes naturally in summer; it is in the winter, when we spend so much of our time indoors, that artificial interest in exercising must be kept up, else it will become tiresome. In one's own home sports are generally impracticable, but physical development should not be neglected because no gymnasium is convenient. The simplest forms of callisthenics, if systematically practised, offer as beneficial exercise as any of the regular gymnasium drills. Indian clubs and dumb-bells can be supplemented with one of the familiar "exercisers." These are very simple, just two grips for the hands, attached to cords running through pulleys fastened against the wall, the pressure being supplied either by elastic cables or weights. The simplest of these exercising appliances can be hooked to a nail in the door-frame and put out of sight when not in use.

For many of the muscles, however, just as much benefit can be gained from the same motions without the power attachments. Nothing furnishes better exercise for the legs, for

instance, than simply lowering and lifting the weight of the body by bending the knees.

Chest-weights or "exercisers" are very good for the arms and upper body muscles, but Indian clubs, dumb-bells and callisthenics give the same effect, if properly used. One thing should always be borne in mind: Lifting or swinging heavy weights is not good exercise. It is very much better to lift two pounds fifty times than fifty pounds twice. Indian clubs and dumb-bells should always be very light, never more than two pounds each for a woman, and preferably only one.

It is a good plan to have a regular hour each day for exercise and never to skip it. Before breakfast in the morning is perhaps the best hour for this, but just before going to bed is also a good time, providing it does not keep one up too late. Half an hour both morning and night is even better than a whole hour at either end of the day. Insomnia and sleeplessness have often been cured by vigorous exercise just before retiring. The blood settles in a tired brain, and vigorous use of the muscles

draws it off to other parts of the body, inducing quieter rest. It quiets the nerves, too, after excitement, so that sleep follows quickly.

If one is preparing for any particular sport, a special course of exercise should be mapped out and followed closely. If it is bicycling, or tennis, or golf, or some other outdoor game that begins in the spring, it is well to start work two months before the season opens. The muscles that require most attention for both strength and endurance are those of the arms, legs, and back.

Dipping the body down by bending the knees and then raising it again with the leg muscles is the best training for the upper parts of the legs, and this can well be combined for strengthening the calves by rising first on the toes and then dipping down and up again, while the feet are still in this position. This formula should be followed until the muscles are tired, counting the number of times and increasing the length of the exercise by five or ten dips each day.

A splendid exercise for the arms, chest, and

back is to stretch the arms out straight at the sides horizontally, then bend them round in front of the body till the outstretched palms touch each other, and finally swing them around the full half circle quickly, still at their full length, till they touch again behind the back, as high up back of the shoulders as possible.

A good combination of the two, and perhaps the best of all callisthenic exercises, is begun by standing upright with the arms straight at the sides; then rise on the toes and dip the body till the fingers touch the floor at either side; raise the body again, bringing the arms out straight at the sides as it comes up; then bring the palms together in front, and end with the swing that touches them behind the back, rising again on the toes as they swing back, and dropping back to the heels as the arms complete the whole exercise by coming back to the sides again.

This should be repeated until the muscles all feel tired, which should take longer each day. If some of the muscles tire before the

others, the part of the exercise that brings those into play can be left out and the rest continued till all are equally fatigued. These callisthenics open the chest, allowing more room for the lungs to expand, and develop the muscles of the legs, arms, sides, and back. If practised rapidly they will soon make the heart beat fast and the lungs breathe deep.

All of these exercises simply lead up to the physical development that insures good health. Health is the first and most important consideration with us all, and good food is the first requisite for good health, then proper breathing to digest the food. We must exercise to use the energy the food produces, and this develops the heart and lungs, which are needed to purify the blood and then pump it through the body. If we go on eating and do not exercise, the stored-up energy soon produces abnormal fat; and if we go on exercising and do not eat nutritious foods, we grow thinner, as the muscles work off the stored-up power until it is all wasted. Some people also grow thinner because the digestion

does not assimilate the food properly, and physical exercise taken systematically will generally correct this.

Plenty of restful sleep is also essential to good health, for the tired heart and working muscles demand it. Sleep refreshes the mind and nerves, but we should always rest flat on the back, because this position relieves the heart from the strain of pumping back up from the feet the continuous stream of blood returning uphill through the veins; the horizontal position of the body when lying down makes this much less effort.

The lungs of most women, particularly those who lead sedentary lives in our cities, suffer from a lack of robust use. They are too seldom expanded to their full extent or in the right direction. Outdoor sports and outdoor exercise—even indoor exercise in a lesser degree—force the lungs to breathe fast and deep, and their constant vigorous use soon develops and expands them until their power and capacity are very much increased. The lungs should swell up high in the chest as they are

inflated, never downward against the stomach, for this interferes with digestion. A woman should exercise as little as possible anyway right after hearty eating, but if she does have to breathe heavily immediately after a meal, and uses her lungs improperly, indigestion will soon follow.

In the absence of physical exercise—when the muscles are not called upon for any vigorous effort—the heart's action is seldom quickened, and only then are the lungs required to breathe deep and fast, in order to purify all the blood that the muscles demand. This explains why people who take no exercise often develop congestion in the unused lower parts of the lungs, which in the end too often runs into consumption. Constant physical exercise from youth up is an almost sure preventive (though not a cure) of consumption.

There is another important reason why systematic physical exercise of one kind or another should appeal to every woman under forty, and many who have long passed the meridian of life. Feminine beauty in both

face and figure is largely dependent upon it, and if thin women and fat women, ugly women and plain-looking women, could only be made to realize this, many figures and faces would be much improved.

Alcohol should be used, like all drugs and medicines, as sparingly as possible. It is an unnatural stimulant of the most powerful strength, and leaves the body weaker after its effect has worn off. The physical injury of alcoholic intemperance is as great as its moral effect, and there is as much danger in the intemperate use of drugs and medicines as of alcohol. Every time a drug is used to correct some fault of the body, the organ affected becomes a shade less self-reliant; and if any stimulant to nature be used too often, the dose must soon be increased to have the desired effect. Soon nature begins to rely on artificial help, and the organs often refuse to properly perform their duties unaided.

For almost all irregularities, nature finds her own remedy without help if permitted to do so. A strain, a broken bone, a cut, or bruised

flesh will all heal naturally if not interfered with; and when we say a disease has run its course, we mean simply that nature has found her own remedy and has finally conquered the body's enemy. Let alcohol and drugs alone; let nature be her own physician as often as possible, and when real sickness does come, if it ever does, a small dose of medicine will have as much effect as many times the quantity if the body has become accustomed to drugs.

The effect of competitive sports where the player becomes excited is beneficial in the long run to the nerves as well as to the heart and lungs. Excitement makes the blood throb up into the head, and the brain grows dizzy and reels when one is not accustomed to such excitement. When a young woman plays any match game for the first time under excitement, she will probably be unable to do her best because of the confusion in her mind—because she gets "rattled." Let her stick to it, however, and soon the nerves, heart, and brain will have become accustomed to this

strain, and at the critical time, when everything depends on the success of a single play, the nerves will not fail her, the mind will remain clear, and her coolness and steadiness will save the day.

The effect of this training can not fail to be of service in the more serious affairs of life, and when the crucial moment arrives, possibly involving life and death, the cool head, trained muscles, and vigorous heart action that are the product of physical development and participation in sports will prove of priceless value. Imagine a woman who has taken part in sports all her life, who has played golf matches, or tennis matches, or sailed in boat races, or swam in races; put her alongside a sister who has not had the benefit of this steadying experience. Imagine the two caught in a burning building, with the only chance for safety to climb down a narrow ladder through many yards of dizzy space; or thrown out of a boat with a long swim before them for safety.

One will keep cool under the stress of excitement because she has become accustomed

to it, and her coolness will carry her safely through either ordeal, to say nothing of the help her muscular strength will be to her. With the weaker sister it would be a different story: she would soon become overwrought with excitement, and her nerves would become unstrung if her muscles did not fail her. She would probably become giddy from the excitement and danger, and, missing her hold on the ladder, fall to the ground, or get a cramp in the water and sink many yards from shore.

Teach any young girl to enjoy outdoor sports; encourage her to exercise in the open air, to become used to the strain of physical exercises and to the excitement of races and matches, and you will build up the very vital organs she will need in after life. When steady nerves are necessary, when a powerful heart or lungs are needed, she will be prepared. Put her on the ladder outside of the burning building or in the water with a long swim for safety, and her trained muscles and experience under excitement will bring her out

of danger; when she lies in the shadow of death from sickness or accident, her physical strength and endurance will pull her back out of danger while a weaker sister's light would flicker and flicker, and finally go out.

VIII

MEN'S SPORTS FROM A WOMAN'S VIEWPOINT

NOTHING can be less satisfactory than to sit among the spectators at any game of sport and not understand what is going on in the field. Something happens among the players, and those on every hand, appreciating the importance of the play, instantly clap or cheer enthusiastically; but the poor woman is utterly miserable who must ask at every fresh outburst of applause, "Now what are they doing with the ball?" or sit in Egyptian darkness wondering what it is all about. Her position is made one degree worse if she has not the courage to confess her ignorance, or her escort has not the patience to explain.

It often takes a keen insight into the intricacies of football, for instance, to understand the cause of all the excitement and enthusiasm

at different points in the progress of an important college match, but a superficial knowledge of the game will do much to make the uninitiated spectator enjoy the play and understand what is going on in most cases.

In such men's sports, which are too rough or physically too severe for women to take part in, it is no wonder that they do not often understand all of the technicalities. Men learn such games from actual participation, as a rule, rather than from the view of a spectator; and from sheer love of sport, they often study them for years before they have gained a complete mastery of all their technical details.

For women who go to see the big college games as spectacles rather than as sports, who enjoy the excitement of the thousands of cheering voices and the infection of college enthusiasm, but to whom the play seems all Greek, this chapter may be of value. Its purpose is to explain briefly the inward workings of the sports which men enjoy, so that any woman who goes to see a football game, a baseball game, a boat-race, a yachting regatta, or

athletic contests, may watch the sport intelligently, and, understanding the play, enjoy it the more.

FOOTBALL

College football, as played in America, is probably the most popular with women of all men's sports, although its season is confined to the eight or ten weeks between the opening of the colleges in September and Thanksgiving Day. It was originally called Rugby football because it was modeled after the game played at the English school of that name, but the sport has since been so completely altered over here that it now differs widely from any of the three styles of football played abroad—Rugby, Association, and Gaelic.

The American game is played on a rectangular field 330 feet in length and 160 feet in width. This playing field is surrounded by white lines painted on the turf, inside of which are other parallel lines across the surface and extending its whole length at intervals of five yards, but their only purpose is to help the officials in measuring distances.

The appearance they lend to the field has given rise to the popular habit of calling it a "gridiron." Three of the lines are heavier than the others, and these are placed, one in the middle of the field and the other two at 25 yards each from the goal-lines at either end.

These goal-lines are the end boundaries of the field, and in the center at each end stands a goal, which is made by two posts 20 feet high and 18½ feet apart, with a crossbar spread between them at a height of 10 feet from the ground.

A goal is scored when the ball is kicked through these goal-posts and over the crossbar, but this play can be made only with a drop-kick or a place-kick, never with a punt. Punting is the easiest method of advancing the ball, and it is done by dropping the ball from the player's hands and kicking it before it touches the ground.

A drop-kick, which is generally used for all goals from the field—those kicked while play is in progress—is made by dropping the ball from the hands and kicking it as it rises

from the ground; for a place-kick the ball is held in place on the ground by one player and kicked by another. A goal kicked from the field counts five points for the side making the play.

It is also possible to score at football in two other ways—by a touch-down, or by a safety. If the ball is carried over the goal-line and touched down to the ground in the hands of an opposing player, it is a touch-down, and counts four points for his side. If a player carries, passes, or kicks the ball back over his own goal-line and it is touched down there by one of his own team, it becomes a safety, and counts against his side and two points for the opponents.

After a touch-down, the side making it has the right to try without interference to kick a goal from a distance of fifteen yards outside the goal-line and in front of where the ball was touched down. If the trial is successful, the goal adds one more point to the score of the side making it.

The game is won by the team making the

most points in a given space of time, the full length of a championship game being two halves of thirty-five minutes each, with an intermission between them of ten minutes. In computing the playing time, the officials take out time wasted by waiting when one of the players is hurt, when any dispute arises, or when the game is delayed for any other reason. Between the downs, however, no time is taken out unless the delay is extraordinary.

The object of the game is to carry or kick the ball down toward the opponent's goal, and to kick it through the goal-posts or carry it over the goal-line and touch it down. The players are always allowed to kick the ball in any direction they please, and to carry it when running. They may not throw or pass it forward (toward the antagonists' goal, that is), but they are allowed to pass or throw it backward toward their own goal as much as they please.

When the ball touches the ground with a player on top of it, he cries "Down," and it is dead on that spot until put into play again

by the center-rusher after the next line-up. During this time, while it is out of play, the ball can not be moved, and the next play begins with it in possession of the team whose player held it when it was downed.

The ball is also out of play the instant it rolls or is carried beyond the side-line at either edge of the field, and belongs to the team whose player first touches it to the ground; but when it is kicked out of bounds, it goes to the opposite side without interference, and in all such cases the ball is brought in fifteen yards from the edge and put in play again as usual by the center, directly opposite where it crossed the side-line.

When a team gets possession of the ball, it is called a first down, and the spot at which this down occurs is marked by the linesmen at the sides of the field by sticking a marker into the ground opposite it. From this point, the team having the ball is required to advance with it a total of at least five yards or retreat as much as twenty yards in the next three attempts, and if they fail to do so they must sur-

render the ball on the spot of the fourth down to the opponents. If the first attempt does not carry the ball forward or backward the required distance, the next is called the second down; another failure brings a third down; but a third failure makes it a first down for the antagonists with possession of the ball, instead of a fourth down for the unsuccessful team which failed to gain its five yards.

If, however, the required distance is covered in any of the three attempts or in two or three of them combined, a new series is begun at once, the next becomes a first down again, and the linesmen make a new mark at once without waiting for the completion of the previous series.

Because of this restriction, which prevents holding the ball without making progress, it is customary for a team to kick the ball down the field and so gain thirty or forty yards, when two attempts have been wasted and the captain does not think it likely that the third will gain the necessary distance. Modern football has become so much stronger in defense

than attack that good teams are constantly stopped in this way, and much kicking of the ball is the result, even when the goal is out of reach and no attempt to kick the ball through the posts is intended. Punting like this advances the ball in big jumps and saves the runners when they are tired.

Should one of these kicks, or a wide-kicked ball trying for a goal, go over the goal-line of the other team, a player of that side touches the ball down to the ground and the play becomes a touch-back. After this the side in possession of the ball is entitled to take the ball out twenty-five yards from its goal-line and put it in play there by kicking it up the field or passing it to a player to run with. A touch-back does not count anything in the score.

When the ball lies on the ground after a fumble, which is when it is dropped by accident, any player may pick it up and run with it until he is tackled and stopped; but after a kick, all of the players on the same team as the kicker are off-side and can not touch

the ball until after one of the opponents has touched it or it has touched one of them, when the off-side players are all put on-side again.

Any player who is ahead of the ball when it is being put in play is also off-side, so the lines of rushers on the two sides are always parallel with each other and with the lines of the field, while the ball rests in the center between the opposing center-rushers. There are several penalties provided to punish a team whose players get ahead of the ball when it is being put in play, the most frequent being a penalty of five yards for off-side play.

There are eleven players on each team, seven of whom are known as rushers or linemen, and they compose what is known as the rush-line, because they line up opposite the ball before each play. The middle man in the line is called the center-rusher; those on either side of him are known as the right and left guards; just outside of them are the right and left tackles, and at the extreme ends of the rush-line are the right and left ends. It is

the duty of these seven rushers to help the backs behind them to advance the ball, and to prevent the players of the other side from advancing it in the opposite direction.

The other four players on the team are known as the backs, their positions being the quarter-back, the right and left half-backs and the full-back. It is the principal work of the quarter-back to take the ball from the center's hands at the beginning of nearly every play and pass it to one of the other men of his team to kick or to run with.

If it is intended to kick the ball, it is generally passed to the full-back, who is protected from interference from his opponents by his own rushers and the other backs of his own team in front of him; and if it is intended to carry the ball, it is generally passed to one of the half-backs for this purpose.

The quarter-back also gives the signals, which are generally a series of figures in a cipher form to tell all of the other players of his team what the next play is to be without letting the opponents know, for modern

football is so much of a team game that all of the eleven players have positions assigned to them for every play, so as to be of the most possible use in helping the runner or kicker to advance the ball.

In recent years many new plays have been introduced into the game, by which the full-back often carries the ball, although he was originally intended only to do the kicking; and most of the rushers are also permitted at times to run with it, the tackles being used most often for this purpose. Occasionally, even the quarter-back himself carries the ball, but he can do this only after a double pass, for the rules prevent his advancing the ball until it has been passed to some other player, who in turn must pass it back to the quarter.

It is the duty of all the other players to help a runner as well as a kicker, for the man who carries the ball must be protected from being tackled and downed by an opponent, and for this purpose he is generally surrounded by many of his own team, who run along with him, forming what is called the

"interference," because they interfere with the opponents who try to tackle their comrade.

BASEBALL

Baseball, whether played by professionals or amateurs, is always the same game, for there are no variations in the rules of play. It is an interesting game to watch, because the play is so open and it is so much less difficult to follow the ball than in football.

It is played on a field, generally spoken of as a "diamond" from the pattern it presents, on which are four bases, located at the points of the diamond-shaped infield. Each base is 90 feet from the next, and all but the home base are stuffed bags strapped to the ground to keep them in place. The home base, or "plate," as it is often called, is a square of metal or stone set in the ground. The other three bases are numbered, being first, second, and third respectively, beginning with that on the right of the home base as you face the field. A run is scored when a player runs around the full circuit of these

four bases, touching each in turn without being put out.

The game is scored by runs, and the victory goes to the team which makes the greater number of them in a period of nine innings. An inning lasts until three men have been put out by the opponents, and the teams alternate taking innings until each has had nine. The object of the game then is for the side which is in, or at the bat, to score as many runs as possible without being put out; and for the side that is out, or in the field, to prevent the opponents from making runs and to put them out.

A player is put out when he misses three strikes (if the last one is caught by the opposing catcher), or when any ball he has batted is caught before it touches the ground; or after it has touched the ground, when one of the opponents with it in his hands touches first base before he has reached there.

When running bases, a player can be put out by being touched with the ball in the hands of an opponent whenever he is caught

between bases; but he can not be put out when he is touching any of them, each of which is a point of safety, like the "hunk" which is so familiar in children's games.

The batter is required to run when he hits a fair ball, and if, in doing so, he forces another of his team off first base, the latter must run to second for safety; and if he in turn forces another off second, and he still another off third, each must run to the next base for safety, and then it is not necessary to touch one of them with the ball to put him out; if an opponent, with the ball in his hands, touches the base to which any player forced off base is running, before he arrives there, he is out without being touched.

When the game starts, one side (decided by lot) is in the field and the other at the bat, taking its first inning. The players take turns at batting, the original order of the team being preserved throughout the game, and the man up standing close to the home plate waiting to hit the ball. The opposing pitcher delivers the ball, and the batter strikes at it or not, as

he pleases. If the ball passes over the home plate and between the height of the knee and shoulder, it is called a strike, even if the batter does not try to hit it. If its direction is poor and the batter does not strike at it, it is called a ball.

The batter is allowed three strikes or chances to hit the ball, and if he fails to hit any of the balls he strikes at (including any called strikes for good balls he refuses), he is out, providing the opposing catcher holds the ball after the third strike. If he muffs it, the batter may run to first base, and is not out unless an opponent with the ball in his hands touches him or the base before he reaches it.

But there are also restrictions on the pitcher as well as the man at the bat. He is required to deliver the ball within reach of the batter, so the latter may have a chance to hit it. If he pitches four poor balls to any batsman before the latter is out or has reached first base in safety, then the batter is allowed to take first base without interference. This is called giving him a base on balls.

Now, if the batter succeeds in hitting the ball, it is a fair ball if the direction it takes is toward the field of play, which is bounded by straight lines running from home base through first and third bases; but should the ball go off farther to either side or behind, it is a foul ball, and the batter is not allowed to run. Under the latest rules these foul balls count as strikes unless caught before they touch the ground by one of the opponents, when the batter is out in consequence. After there are two strikes against a batter, a foul ball that is not caught counts as nothing, however. A foul tip is made when the bat just touches the ball without altering its direction, and it counts as a strike if caught by the catcher, or nothing at all if he misses it.

When a fair ball has been hit safely, the batter instantly becomes a base-runner, and he runs to first base. If it is impossible for the opponents to put him out before he reaches there, his play is called a base-hit; if he safely secures two bases without error on the other side, it is a two-base-hit, or a "two-bagger"; if

three bases, then a three-base-hit or a "three-bagger"; and if he hits the ball so far that he makes the complete circuit of the bases before his opponents can secure the ball and stop off his career, it is called a home run.

Once safely on any of the bases, the runner can progress to the next at any time during the play (with one or two other technical exceptions) but on a foul ball, or on a fair ball that is caught on the fly by an opponent. If a fly-ball is muffed by the fielder, the base-runner is at liberty to run, or after it has been caught he is free again. If he starts while the ball is in the air, and it is finally caught by an opponent, the base-runner must return to his former base before he can go on again; he is out if an opponent with the ball touches the base he left before he gets back there. At all other times in the game the base-runner may run at his discretion. He is stealing a base if he tries to run on any play but a batted ball or an error of the opponents. If he is headed off before he can reach the base he is trying for, he is always at liberty to re-

turn to that he left, unless some other runner has since occupied it; but once having touched a base, he can never go back to the one before.

If the team which has the last turn at the bat is ahead in the score when the opponents are all out in their ninth inning, the leading team does not take its last inning, for the game is already won. When the score is tied at the end of the ninth inning, extra innings are played until one side is ahead in runs at the end of an even number of innings.

There are nine players on each team, divided into the battery, the infield, and the outfield. The battery consists of the pitcher and catcher, and they are the most important men on the team, as they handle the ball most of the time.

The infield includes four players: the first-baseman, second-baseman, and third-baseman, whose duty it is to guard the bases after which they are named, and the short-stop, whose position is about midway between second and third bases, where he is expected to stop

grounders or low-batted balls, many of which bound along the ground in that direction.

The outfield includes the left-fielder, the center-fielder, and the right-fielder, and their duties are to catch fly-balls that are batted out of the reach of the infielders, and to stop bounding balls and throw them in to the basemen to put out the opposing runners.

YACHT-RACING

Yacht-racing is in many ways the most difficult of all sports to watch, because of the speed and the distances traversed by the contending boats, and the difficulty of following them. For the international races for the America's Cup, there are hosts of steamers that always follow the racers, and many thousands of spectators are able to watch them from one end of the course to the other.

At some of the less important regattas of the yacht-clubs, spectators have opportunities to see the races from the shore, or to follow the yachts in passenger-boats provided for the purpose. The sport is full of techni-

calities that one should understand to fully appreciate it, however.

Racing yachts are divided into classes, according to their size and rig, and prizes are offered for each class in most regattas, so that yachts race almost exclusively against others of their own type and size, although all may be sailing over the course at the same time.

The smallest racing boats are catboats, seldom over 25 feet in length, and with a single mast and one sail. Then come sloop-rigged yachts—those with one mast and two or more sails; and there are many classes for this rig, varying all the way from a 15-foot open jib-and-mainsail boat to the big "single-stickers" or cutters that race for the America's Cup, which are in the 90-foot class.

Besides the catboats and the sloop-rigged yachts, there are also schooners, which are vessels with two masts and many sails, and knockabouts, a new class of small yachts designed for combined cruising and racing. These knockabouts carry only two sails—

mainsail and foresail. By far the largest part of the yacht-racing, however, is among the sloop-rigged yachts.

The length of a racing yacht is really her racing length, which differs somewhat according to the club rule under which she is sailing. It is generally determined by an intricate calculation worked out from her water-line length, which is the actual length of her hull on the water line, and her sail area, which is figured from the number of square feet of canvas she can spread. The formula for this calculation of racing length varies somewhat in different clubs, but is almost invariably computed from these two dimensions.

In all yacht-racing, handicaps are allowed by the larger to the smaller boats at the rate of so many seconds per mile for every foot of difference in their racing length. This allowance is figured after the race is all over, so that the boat which crosses the finish-line first does not always win first prize, by any means, particularly if the finish is close and the larger boat comes in first.

The starting time is subtracted from the time at the finish, and the difference gives the actual or elapsed time required to cover the course, from which is subtracted the time allowance or handicap, and this gives the final result of the race in corrected time, from which the order of the competing yachts is decided.

The courses in a regatta often vary, being shorter for the smaller boats than for the big fellows. They are indicated by marks in the water, buoys or boats anchored for that purpose at announced points, and the racing yachts are required to turn around them in the order given. Most regatta courses are laid out in a triangular or other odd shape, so that all of the sailing qualities of a racing yacht can be tested. Over a triangular course, no matter from which direction the wind blows, there is pretty certain to be a good variety of sailing.

Some races, particularly in the international series, are sailed over windward-and-leeward courses, and in such cases the course to be sailed is measured parallel with the

direction of the wind for a certain distance (fifteen miles in the big international races), and a stake-boat anchored at the turning-point for the boats to go around. The racers have to go to windward, or beat against the wind, for half the distance, and then reverse the style of sailing for the other half, and run before it.

These two points of sailing—beating and running—are considered the most important racing qualities of a yacht, although most yachts are fastest of all in reaching, which is the third cardinal point of a yacht's method of locomotion. To reach is to sail across the wind, such a course being a close reach or a broad reach, according to whether the yacht is heading up somewhat close to the direction from which the wind comes, or well away from it.

Racing yachts are started from an imaginary starting line drawn between two points, generally the anchored referee's boat and some other boat, or some buoy or fixed mark on shore. The starting signal is the firing of a

cannon, and in most cases a given time (from two to five minutes) is allowed for the boats to cross this line. The actual second at which they do cross is then taken as the starting time, unless they cross after the second gun, when they are timed as though they had crossed when it was fired at the end of the specified time allowed for the start. In races sailed with a one-gun start, a single gun is fired a certain number of minutes after the preparatory signal, and that time is taken as the starting time for all, no matter how soon or how long after it is before they actually do cross the line.

Much jockeying, either before the start or during the race, generally goes on for the windward position, which is always preferable, because the sails of one yacht to windward of another get the wind first, and if she is close enough and directly in front of the other, she blankets the rival's sails, taking some of the wind out of them, and slowing up her speed in consequence. This is perfectly legitimate, the only restrictions being

that one boat shall not approach another close enough to make it possible for their rigging to become fouled or their hulls to be in danger of touching in any way.

When two boats are approaching each other, the law requires that the one sailing closest to the wind—that is, whose course is laid nearest to the compass direction from which the wind is coming—shall have the right of way, and the other must steer out of her way; or when both are equally close to the wind, a vessel on the port tack must give way for another on the starboard tack, if there is danger of fouling; or a yacht overhauling or overtaking another must keep clear of the boat ahead. If sailing parallel and both on the same tack, the windward boat must not bear down close enough to the other to make a foul possible, but she can come close enough to steal away her wind and slow down her speed, so the windward position is very valuable.

The object of racing yachts is simply to cover the specified course in less time than

The sails of a racing yacht

others against which they are racing. There are no restrictions as to how a boat shall sail or what sails she shall carry. She can set all the canvas that her spars and rigging will support. A good skipper increases his sail in a light breeze as much as possible, and he shortens it in a heavy wind only enough to keep his boat from heeling or tipping over too far to travel fast.

The ordinary sails of a large sloop-rigged yacht are (see cut of yacht on opposite page) the mainsail (1), the fore-staysail (2), the jib (3), the topsail (4), and the jib-topsail (5 shows the stay on which it is set); but if she is a smaller boat, say under 50 feet, she will probably not carry any topsails. The mainsail is always used, but it can be reefed for a very heavy wind by folding away some of its canvas under ropes or reef-points at the lower edge close to the boom, and raising only part of it. The staysail (which is the customary abbreviation for the fore-staysail, although it is sometimes referred to as a foresail in single-masted boats) and the jib are almost always

used unless sailing before the wind, when they are often taken in. These three are known as the lower sails.

The topsail and jib-topsail are set whenever the wind is light enough to carry them, and often a club-topsail is set in place of the former. This spreads much more canvas in the same place by using a yard and a club —two long spars attached to its edges—to stretch the canvas out far beyond the reach of the mast and gaff, the spars on which the ordinary or gaff-topsail is supported. The biggest sloops and cutters also carry a number of different-sized jib-topsails, any of which can be set on the same stay (5), and they are varied according to the strength of the wind, the smallest being the baby-jib-topsail and the others ranging in size, No. 1, No. 2, etc., up to the enormous balloon-jib-topsail.

Now, when a big sloop-rigged yacht is sailing before the wind, there is practically no chance for her to tip over, and every possible square foot of canvas that she can spread increases her speed. For this purpose she has

a great loose balloon sail like the balloon-jib-topsail, called the spinnaker, which she can set on the opposite side from her mainsail. This huge sail, the biggest ever employed by a racing yacht, is stretched from the topmost point of the mast to the deck and thrust out far over the water on a boom or heavy spar pushed out from the mast like an arm to hold its bottom edge away from the boat.

With this spinnaker is generally used the balloon-jib-topsail before the mast to catch any wind that slips through between the mainsail and spinnaker. The spinnaker is useless, however, unless the vessel's course is almost dead before the wind, and when she is running diagonally before it the big balloon-jib-topsail can be used to better purpose without the spinnaker.

When these big sails are set and all drawing well, so they stand out like great balloons blown up with compressed air, is when a racing yacht looks most impressive, and it is not surprising then that they are often described as "loaded down with great clouds of canvas."

From deck these sails do look remarkably like huge white clouds.

ROWING

There is little that is technical about boat-racing, but a brief explanation of a few vital points may make the sport better understood and more appreciated by women who go to see the college races at New London and Poughkeepsie, or to the other rowing regattas.

The object of a rowing race is simply to pull a boat over a given course faster than the rival crews, and every energy in both preparation and training is bent in the direction of pure speed. The boats which are rowed are called shells from the light construction that is used to make them slip through the water as quickly as possible. These are made of wood, generally cedar, or of thick paper chemically prepared so that it will not leak or become water-soaked. Some experiments have been made with other light materials, notably aluminum, for building racing shells, but boat-build-

ers have returned almost invariably to paper or wood.

These rowing shells are rigged for all the big college races to seat nine men, eight oarsmen and a coxswain. Each sits on a narrow seat on wheels or rollers that slide over little metal tracks backward and forward with every stroke. This slide gives the oarsman a greater reach for his stroke and lengthens the sweep of his blade, thus increasing the amount of pressure it exerts on the boat's progress. His feet are braced against a specially prepared brace with straps or skeleton shoes fastened to it by which they are held in place. He wears as little as is consistent with decency, in order to avoid the weight and friction of clothes and for coolness during the extreme exertion of rowing.

The oars are called sweeps, and each measures about 12 feet in length. The boat is so narrow that little leverage could be secured from the side for so long an oar, so there are outriggers to hold the oar-locks, or pivots on which the oars turn, far out over the

water. These outriggers are steel frameworks extended out on either side, in which the oars are locked fast so they can not jump out of place during a race.

The positions of the rowers and even the men themselves are known by numbers, except the first and last man of each crew. The forward seat or rower is called the bow-oar; the next is No. 2; then come No. 3, No. 4, No. 5, No. 6, and No. 7; while the oarsman nearest the stern of the boat is called the stroke-oar, because he sets the time and length of the stroke for the others of the crew. The last man is selected to set the stroke because all of the rowers face the stern and can watch his oar best.

Each man rows only one sweep, using both hands and arms for that, and the oars alternate on opposite sides of the boat, the stroke-oar always being on the starboard, or right-hand side as you face the bow. This makes No. 6, No. 4, and No. 2 also on the starboard side, while No. 7 rows a port oar and he sets the stroke for No. 5, No. 3, and the bow-oar, all

of whom are on the opposite side of the boat from the stroke-oar, though No. 7 copies his stroke, of course, from the stroke-oar in front of him.

The coxswain is a passenger and sits in the stern facing forward. As he does none of the work that sends the boat ahead, his bulk is all dead weight, and a light man is always selected for this place. The duties of the coxswain are to steer the boat, and by bending his body in time with the stroke, to keep the oarsmen all in perfect unison, or by shouting in time with the beginning of each stroke (generally the word "catch" is used) to indicate the time to dip the blades; and to encourage the men in a race, tell them when to make a spurt and watch the opposing crews.

The coxswain generally acts as captain (although there is a regular rowing captain) while the men are in the boat, and he gives the orders for the oarsmen about starting and stopping. The regular coach often takes the coxswain's seat when not racing, and he coaches the crew through a megaphone strapped to his mouth as

he steers. Sometimes the coach follows along in another boat after the crew at practise, shouting instructions to them, but in his absence the coxswain generally acts as his understudy and often coaches the men himself.

Rowing is generally very severe work, and in regattas the oarsmen are often badly exhausted before they finish a hard race. The distance is usually four miles for the intercollegiate races, and for about twenty minutes the oarsmen strain every nerve and every muscle to make the boat travel fast. The number of strokes to the minute varies from 30 or 32 up to about 40, when a fast spurt is going on toward the end, and this "pumps" the rowers so much that both their wind and their strength are often badly gone at the finish. How severe is the exercise is shown by the fact that the average loss in weight through excessive perspiration during the twenty minutes of an intercollegiate boat-race is about four pounds for each man.

During recent years it has been the custom in some of the college regattas to add a second-

ary race for the substitutes for the university boats. These crews are made up of the next best four rowers outside of the regular college eight, and they are used as substitutes for the regular crew in case an extra man is needed. There is also a race each year between eight-oared crews of freshmen, and almost as much interest is taken in this event as in the more important one after.

Besides the eight-oared shells of the colleges, there are many other kinds of boat crews raced in the regattas held by the boat-clubs both here and abroad. At the famous Henley regatta in England, and in the National, Middle States, and other American regattas, the crews range all the way from eight oarsmen down to one.

When an oarsman rows with two oars instead of one, he is sculling, and his oars, much shorter than the long single sweeps, are called sculls. Hence the name of the race for the "Diamond Sculls," the famous prize rowed for each year at Henley, and other similar rowing events. In these big regattas there are

generally races for single sculls, with one man in each shell; for double sculls, with two oarsmen, each rowing a pair of oars; for pair-oared crews, in which there are two men, each rowing one sweep; for four-oared shells and eight-oared shells.

Racing boats also vary somewhat. Besides the standard shells, which are decked over fore and aft, and open only around the little rowing box that contains the seat for the oarsman, there are gigs, which are light cedar boats open all the way, a little wider than a shell and a little heavier, and barges, which are still heavier open boats, seating four, six, eight, or twelve rowers, a coxswain, and generally a few passengers. Very few shells for less than eight oarsmen carry coxswains, as it is generally the custom for the stern rower, or stroke-oar, in four-oared crews, to steer with his feet. In boats with only one or two rowers there is seldom any rudder at all, the steering being done with the oars.

There is also a distinction made between oarsmen in American regattas outside of the

colleges. They are divided into three classes, seniors, intermediates, and juniors, and their grade depends solely on whether they have won races or not. All rowers are juniors until they have won a race; when they win as juniors they become intermediates, and when they win as intermediates they become seniors. A senior can not enter a race for intermediates, nor an intermediate enter a race for juniors; but any oarsman of a lower class can row in a race open to the class above him. Should he do so he is immediately graduated into that class, no matter whether he has ever won in the class below or not.

ATHLETICS

Athletic sports are one of the favorite pastimes among college men. They consist of two kinds, track events or races and field events or competitions, and in each there are some technicalities that it is well to understand in order to watch the games intelligently.

Track sports consist of running races,

walking races, and hurdle races, and in each the object is simply to get to the tape, or finish-line, first. The standard distances for running races are from 100 yards to two miles, and those up to 300 yards are called sprints, for here the runner uses his top speed from the start to the finish. In the middle distances—anything between 300 yards and a mile—the runner saves much of his strength for a spurt at the end and does not try to use his top speed at first; while in the long-distance running races—those of a mile or more—the question of superiority is largely one of endurance.

In a general way, the standard speed of the fastest runners is 10 yards to each second as far as they can sprint. The best sprinters travel 100 yards in about 10 seconds, 220 yards in about 22 seconds, and 300 yards in a little over 30 seconds. By studying the records it becomes apparent that the delay in getting started is not made up until after 50 yards have been covered, and then the runner goes a little faster than 10 yards to the second

until he begins to tire after passing 200 yards, when his speed falls off again.

If an athlete has as far as 400 yards to race, he does not attempt to cover the first hundred in "even time," as this 10-yards-to-the-second speed is called. In these middle-distance races much depends on the judgment of the runner in setting as fast a pace as he can hold to the finish, and in not running himself all out in the first half of the race, so that he can not finish the last hundred yards fast, nor slowing up so much at first that he can not make up lost ground toward the end.

In hurdle races there are two kinds of hurdles used, some 2½ feet high and others 3½ feet high. The two standard distances for hurdling are 120 yards (over high hurdles) and 220 yards (over low hurdles), and in each there are ten obstructions to be cleared by the runner, the distance between them being 10 yards for the high hurdles and 20 yards for the low ones.

The runners in these races have to calculate exactly the number of strides or bounds

to make between the hurdles, and their footprints seldom vary many inches, for if they step too close to a hurdle or too far from it they are thrown out of their stride and can not jump it without delay that would cost them the race. In the high hurdles most runners take just three strides after jumping each hurdle, while in races over the lower hurdles, which are twice as far apart, they generally take seven strides between the obstructions.

A runner is not disqualified for knocking down one or two of the hurdles in jumping them, but if another contestant is running behind him in a race and he knocks down a hurdle, the opponent gains on him. Records, however, are not allowed for any race unless all of the hurdles were cleared properly and left standing. In England hurdle races are generally run on turf instead of cinder tracks, and the hurdles are fixed in the ground, so a bad fall results if the runner does not clear them fully.

In walking races, the contestant is required to keep at least one foot on the ground all of

the time; this is the distinction made between running and walking, although there used to be a rule which required only that both heel and toe of each foot must touch the ground at every step, and this was called "heel-and-toe" walking. A judge of walking is one of the officials in athletic games when walking events are on the program. His duty is to warn a contestant first, and then disqualify him and rule him out of the race if he finds that he is not walking fairly—if he is running, that is, instead of walking within the definition.

Relay races are one of the most popular of the newer forms of athletic sports, particularly among college athletes, and these are generally run with teams of four men, each running a quarter of a mile. The second runner starts his relay when the first has finished his quarter, the third when the second completes his lap, and the fourth when the third has finished. At the end of each relay the runner is required to touch the hand of the next man of his team before the latter can start, or to hand him a ribbon or something else in proof that

the new man did not start before his predecessor had finished his lap.

Cross-country running or steeple-chasing is simply a long-distance running race over a given course across rough country, marked out in some way to indicate the direction and distance the runners must go. The distance varies from two to ten miles. There are always many obstructions in the course, such as hedges to be jumped, fences to be climbed, and ditches and brooks to be leaped.

Among the field events, the most interesting, perhaps, are the jumping contests. There are high jumps and long or broad jumps, both running and standing, and pole-vaults for height. The object of these sports is to cover a greater distance in height or breadth than the adversaries. A man can jump much higher and much farther if he runs before he springs, so the events restricted to standing starts are an entirely different class.

In high jumping the distance is measured from the ground to the top of the bar the jumper clears, and if he knocks the bar off its

supports the jump is a failure. In broad jumping the distances are measured from a board called the take-off set in the ground at a given point, from which the jumpers spring, to the nearest break in the earth, which is generally the indentation of the nearest heel-print. If a man jumps from three inches back of the take-off bar, he is not allowed these extra three inches, the distance always being measured from the farthest edge of the bar.

In pole-vaulting the same rules are observed as in high jumping, except that a long pole is used as a lever against the ground on which to push the athlete higher into the air. If the pole knocks off the bar the jump is a failure, so the vaulters have to let go and push it back after they have cleared the bar so that it will not knock off the bar.

Weight-throwing has four or five variations. Putting the shot, throwing the hammer, throwing the discus, and throwing the fifty-six-pound weight are generally on the championship programs. In these sports the athlete stands in a seven-foot circle marked out on the

ground, generally with a wooden rim. In the shot event, a round ball of iron or shot, weighing either twelve or sixteen pounds, according to the conditions of the contest (the twelve-pound shot is seldom used except by schoolboys), is held in one hand over the shoulder and thrust put from the body into the air as far as possible. It can not be thrown, but must be pushed away from the body by straightening the elbow, and the distance it goes from the edge of the circle to where it first touches the ground is the length of the put.

Hammer-throwing is done with a ball of iron attached to a three-foot handle of wood or wire (originally this was a sledge-hammer with iron head and wooden handle), the whole implement weighing twelve or sixteen pounds, as in the case of the shot. The manner of throwing it is to swing the hammer around the head several times, sometimes turning the body with it the last time to get greater momentum, and then to hurl it into the air. The distance is measured, as with the shot, from

the edge of the circle to the spot where the hammer first touches the ground. If the athlete steps out or touches the ground outside of the seven-foot circle in throwing either the shot or the hammer, or until after it has touched the ground, his throw is fouled and does not count.

The heavy weight (fifty-six pounds) is thrown in the same way as the hammer, being swung around the body by a short handle or grip, and it is simply a question of brute strength and "beef" how far it can be thrown. The discus may be thrown in any way possible under similar restrictions as the hammer, but the customary way is to hold it flat in one hand and, swinging the body around, shoot it off at an angle with a long swing of the arm and a quick jerk of the body.

This sport originated with the ancient Greeks, and was first learned by the Americans when they sent a team of athletes to Athens, in 1896, for the international games. This discus is modeled after an old Greek implement, shaped like a large saucer or plate,

of iron or stone, about a foot in diameter and weighing between seven and eight pounds.

In all these field events, each competitor is allowed three trials, except in the jumping and pole-vaulting for height, when every man has three trials at each height, the bar being raised an inch at a time for jumping, and generally three or four inches each time for pole-vaulting.

In many sets of athletic games, team-championship banners are awarded on the same system that the colleges use to decide their intercollegiate championship. In the intercollegiate games five points are allowed for the winner, three for the second man, two for the third, and one for the fourth in each event. In other games, generally only the first, second, and third men to finish are counted, and five, three, and one in points, or five, two, and one, are allowed their clubs.

In cross-country running, team championships are decided and club banners awarded by counting as many points for a team as the numbers of its leading runners in the order

at the finish—that is, by adding together the numbers of the first four or five men (as many as constitute a team) of each club to finish. The championship is then awarded to the team with the smallest total. For instance, if a club's first four men finish second, fourth, eighth, and ninth, its total score would be 23, and it would win over a team whose fastest runners finished first, sixth, seventh, and tenth, and whose total would then be 24.

THE END

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